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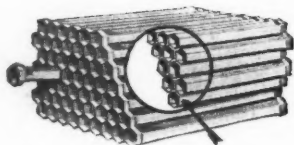
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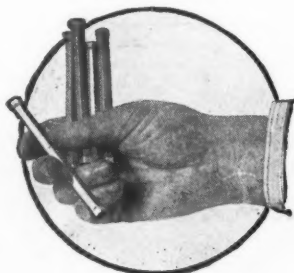
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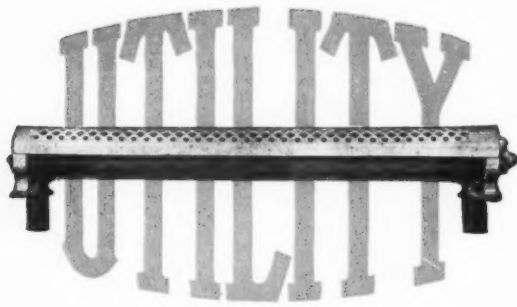
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AUTOMOTIVE INDUSTRIES

The AUTOMOBILE

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No. 14

France Adopts Definite Plan to Promote Aircraft

In that country, where leaders visualized, during the war, the importance of aircraft, steps are being taken to keep alive the industry as a future means of defense and for commercial exploitation. A Department of Aeronautics will supervise domestic regulations and award subsidies and premiums

By Allen Sinsheimer

THE French Government believes that commercial freight, express, mail and passenger transport by aircraft will develop so importantly in the near future that assistance to manufacturers and to operating companies from the Government will insure the nation proper military defense and commercial progress. Consequently, France has devised a plan for subsidizing operating aircraft concerns, paying premiums to pilots and crews, and in other ways generally promoting and encouraging aviation. By this means it expects at all times to find the necessary planes and pilots for military emergencies without engaging in huge expense in peace times for the operation of a great military air force.

Department of Aeronautics has been organized with three branches: Service of Manufactures, Service of Study, and Service of Aerial Navigation.

The Service of Aerial Navigation comprises civilian and military technical authorities and is under the direction of a military officer. It is distinct from the central organization and makes a special point of creating air routes and developing aerial navigation. The service is organizing a net-like system of aerial ports so devised that the pilot can always be certain of finding a landing field, shelters and repair workshops.

This section establishes meteorological and wireless systems of communication between the ground posts and the aircraft, and to insure the proper working of the com-

munication system, the State will allot a large service of personnel for each port. These ports will be organized with the aid of the various municipalities and departments interested in directing aerial travelers to their regions.

The navigation service is preparing also to give financial support to all aeronautic undertakings, aiming particularly to lower the cost of aerial transport of all commodities so as to make these facilities accessible to the public.

The Government plans to share the cost of the airplanes with the operating companies. It will distribute premiums to crews and pilots in proportion to the duration of trips without landing and for the regular transportation of passengers and goods based on the amount of tonnage carried and the interest attached to the particular line and route. It is expected that these routes will be made national, international and colonial, many of them penetrating into the heart of Africa.

Airplanes directly devoted to military utilization will be subsidized, that is, machines showing special characteristics of horizontal flight and in climbing.

Premiums in these instances, however, will be less important, as it is the commercial airplane and not the military airplane that France wants to develop.

Prizes will be distributed to any aviator rendering ser-

vices of interest to the public without there being the least obligation on his part as regards doing anything for the State.

The Government has definitely decided that it will not exploit aerial transportation lines, but will leave all such exploitation to private interests.

The military authorities at this time have no aerial postal service in their hands and, in the event of the organization of governmental transportation lines, such as mails or parcel post, the assignment will be made among competing contractors for taking over such lines.

The French Government has estimated that the net cost of transportation per kilometer by an airplane with a carrying capacity of 500 kilos is 5 to 6 francs, and in the case of a machine with a capacity of 2 tons, 10 to 12 francs. It will base its operations on these figures, although they are said to be really higher than they should be, owing to the heavy operating expenses at the present time. This high expense due, among other things, to prohibitive rates of insurance and also to the fact that only one line is exploited at present by the various aerial transport companies.

It is expected that, if there is a continuous development of a system of lines, the operation of heavy freight airplanes will drop to 4 francs, which price is barely double that of the kilometric ton transported by motor trucks, while the speed of the airplane would be five times as high.

Aerial transport companies subsidized by the Government will be under certain obligations. They will have to fly a certain number of aircraft, keep them thoroughly overhauled and inspected, guarantee safety for passengers, and operate in accordance with the scales of maximum tariffs provided by the Government. Likewise, pilots and navigators accepting premiums from the Government will be obligated to pass periodical examinations and tests.

The Service of Study will be devoted to general research, including laboratory tests.

The Service of Manufactures will regulate and supervise production and pass upon all orders and requisitions for aircraft.

The French Government anticipates that, by maintaining the activity of its aircraft industry, it will first insure the maintenance of the industry as a prime factor for national defense. Consequently, it always will be developing aerial navigation and be able to find reserves of qualified pilots and mechanics. This would do away with the necessity for mobilizing the necessary military staff and would thereby represent so much gain to the national protection. The transportation aircraft would in themselves comprise a sufficient aircraft reserve to meet the demands of warfare.

Lastly, this aircraft, it is expected, will provide an excellent means of promoting export business and the extension of foreign trade in foreign countries.

It is probable, according to information received in the United States by the National Advisory Committee for Aeronautics, that France will have this program operating within the next six months. The first steps may be the establishment of air communication between France, North Africa and South America by means of dirigibles and airplanes.

With this object in view, the Government has ordered resumption of the French naval programs for the building of rigid dirigibles that have already been ordered, together with hangars and shipyards.

Lines of communication will be established between France and the adjacent countries promptly to avoid the possibility of France being anticipated by other Governments. Transversal lines will be established within the French boundaries running from east to west and including the line between Bordeaux and Nice, the line between Nancy and Bordeaux and numerous other lines that will drain the commerce of the French frontier toward the Atlantic and remedy the inconvenience of the present French railway system, which, instead of operating to the seaports, is centralized at Paris.

Air Race Fixes Cross Country Route

A transcontinental air route between the Atlantic and the Pacific oceans, suitable for practically every sort of flying and marked by sufficient landing fields with short distances separating each, has become a reality through the army airplane race to be under way next week between New York and San Francisco. About seventy-five machines are participating in the 5,400 mile round-trip contest that started, the planes departing from either end of the cross-country route, the morning of Oct. 9.

Many planes previously have made the trip between the Eastern and Western coasts, singly and in pairs or in some cases perhaps in larger numbers, but each time the route has differed and each time much difficulty was experienced by pilots and mechanics in finding suitable landing places. The race, however, controlled as it is by the military and run over a set course that has been called one of the shortest and most practical aerial roadways across the United States, was considered by fliers as having definitely fixed an air highway that may be used in the future for commercial or pleasure flying.

Twenty stops have been scheduled for the contesting pilots, all of whom must fly over the same course. None of the "jumps" between controls will entail a greater distance of flight than 180 miles—the maximum being that section from Buffalo to Cleveland—and in several cases the mileage is less than 100, the average, however, being probably about 140 or 150 miles. Maps of the course prepared by the army for use by the competitors show that natural features of the terrain, such as rivers, valleys and mountains, have been utilized to the greatest extent possible in fixing a route over which directions will be easy to find. The "air grade" over the Rocky Mountains is one that will occasion the least amount of high flying, although it is natural that in some places the machines will be forced to rise perhaps 9,000 or 10,000 ft. to clear safely the mountainous obstructions.

However, in setting forth the route, an attempt was made to fix a course that would be the easiest to find

and the easiest for flying, at the same time keeping down distance. These are the factors that make for success in commercial flights in which operating costs must be reduced and the safety factor for plane, personnel and freight brought to its highest pitch. The result becomes that the present race, the first in which any large planes have crossed the continent, should be a forerunner of much sustained flying between the East and the West.

Something of the characteristics of the route may be gained from the table of control stops accompanying this article. It shows a course that is comparatively straight from East to West, excepting a curve to the north from New York to Buffalo and the slight southerly course into San Francisco after the west-bound fliers have left Wyoming. These curves have been made necessary, it was explained by race officials, for rather obvious reasons, mainly due to topography and the nature of the terrain. Some changes, of course, mainly favoring shorter distances, might be made in the New York state end of the route, although as it now stands certain advantages are gained from following natural objects, such as railroads, mountains, rivers and canals.

At the same time, that portion of the route does not follow that taken by the New York-Chicago mail planes and for commercial flying, perhaps, should be revised. The mail planes, leaving New York City, steer almost a due western course to Bellefonte, Pa., and should be much speedier than the army racers. Swinging up to Rochester and Buffalo, instead of crossing into Pennsylvania, the army fliers will have a much greater distance on that end of the contest and cannot make such time between New York and Chicago as the mail carriers. The chart follows:

| Control stops— | Altitude | Time change | Distance between stops | | —Miles from start— | |
|---------------------------|----------|-------------|------------------------|----------|--------------------|----------|
| | | | E. to W. | W. to E. | E. to W. | W. to E. |
| Mineola, Long Island..... | 106 | Eastern | 0 | 142 | 0 | 2,701 |
| Binghamton..... | 863 | " | 142 | 125 | 142 | 2,559 |
| Rochester..... | 513 | " | 125 | 56 | 267 | 2,434 |
| Buffalo..... | 583 | " | 56 | 180 | 323 | 2,378 |
| Cleveland..... | 603 | Central | 180 | 147 | 503 | 2,198 |
| Byran, Ohio..... | 767 | " | 147 | 160 | 650 | 2,051 |
| Chicago, Ill..... | 593 | " | 160 | 155 | 810 | 1,891 |
| Rock Island, Ill..... | 563 | " | 155 | 158 | 965 | 1,736 |
| Des Moines..... | 805 | " | 158 | 118 | 1,123 | 1,578 |
| Omaha..... | 1,034 | " | 118 | 132 | 1,241 | 1,460 |
| St. Paul, Neb..... | 1,815 | " | 132 | 118 | 1,373 | 1,328 |
| North Platte, Neb..... | 2,805 | Mountain | 118 | 112 | 1,491 | 1,210 |
| Sidney..... | 4,085 | " | 112 | 93 | 1,603 | 1,098 |
| Cheyenne..... | 6,062 | " | 93 | 113 | 1,696 | 1,005 |
| Rawlins, Wyo..... | 6,623 | " | 113 | 137 | 1,809 | 892 |
| Green River, Wyo..... | 6,082 | " | 137 | 137 | 1,946 | 755 |
| Salt Lake City..... | 4,248 | Western | 137 | 100 | 2,083 | 618 |
| Salt Lake City..... | 4,300 | " | 100 | 162 | 2,183 | 518 |
| Battle Mountain, Nev..... | 4,507 | " | 162 | 169 | 2,345 | 356 |
| Reno, Nev..... | 449 | " | 169 | 112 | 2,514 | 187 |
| Sacramento..... | 30 | " | 112 | 75 | 2,626 | 75 |
| San Francisco..... | 15 | " | 75 | 0 | 2,701 | 0 |

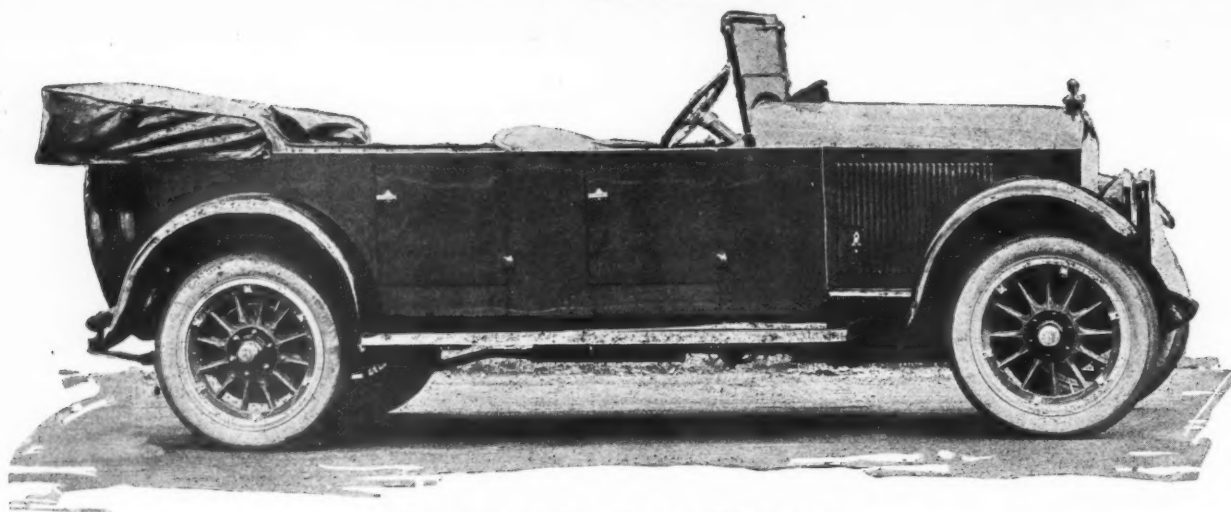
One of the most interesting features of the contest, considering it from the standpoint of the person interested in the future development of aviation, is that presented by the landing fields. For the first time, a series of these have been mapped out clear across the United States, a fact that should occasion more than passing notice from anyone who believes the airplane and the airship have a definite and a great future before them. Some of these fields have just been laid out, some of them are army stations and others, necessarily, particularly in the West, are nothing more than open spaces without permanent accommodations for ship or plane. But all, at least, have been mapped and charted and provide a start on which much development may be based. If that work is carried out, either by national or private interests as it seems that immediate and future needs make more or less imperative, the present race becomes of real practical value.

The mechanical ability of many of the contesting machines can scarcely be doubted by any person at all familiar with recent developments in the aircraft field. The Martin bomber, equipped with its double Liberty engines, developing 800 hp. and capable of carrying a crew of four men, five machine guns and an additional freight load, not including gasoline, of about three-fourths of a ton, certainly can make the trip. The huge DeHavillands, both the Four and the Nine, likewise should have approached a state in which such a course is actually possible and many other of the entrants—the Le Pere, the S. E. 5, the Bristol Fighter, the S. V. A., the Thomas Morse, the Spad, the Nieuport, and the Fokkers—have had war records that entitle them to attempt such a trip with a high probability of success.

The army, perhaps, instituted the race for the purpose of obtaining recruits and for the training of its flying personnel. These, it seems likely, were the chief and underlying reasons for the contest. But the race should have much greater results. The laying out of the landing fields and the fixing of a transcontinental route are among them. Propaganda in behalf of a broad and comprehensive air service likewise should be one of the results and it goes almost without saying that much mechanical information of a worthwhile nature will come out of the contest.

No other aerial flight has reached the magnitude of the coming round-trip race. The recent New York-Toronto handicap event had fewer entrants than the present race and was not one-quarter its length. Many other long-distance flights, both in this country and in Europe, perhaps, have had results of a far-reaching nature for the future of aircraft but it seems probable that the New York-San Francisco event should far outstrip them, both in direct and indirect advancement of the science.

The rules of the race, in brief, call for the starting of contestants at Mineola Field—the New York terminus—and at San Francisco at the same time. Some sixty machines have been announced as starters from New York and nearly twenty from San Francisco. Each plane must make its control stops, where ample facilities have been provided or at least ordered, and there may be no night or Sunday flying.



Touring car body of the new National Six

Overhead Valve Engine in the National

There are several novel features in this new power plant, which has been in development for two years and which is given to the public with several marks of war experience in design and manufacturing methods. The peak is 71 b.h.p. at 2600 r.p.m. Manufacturing facilities and methods will facilitate much greater production. Six body designs on one chassis

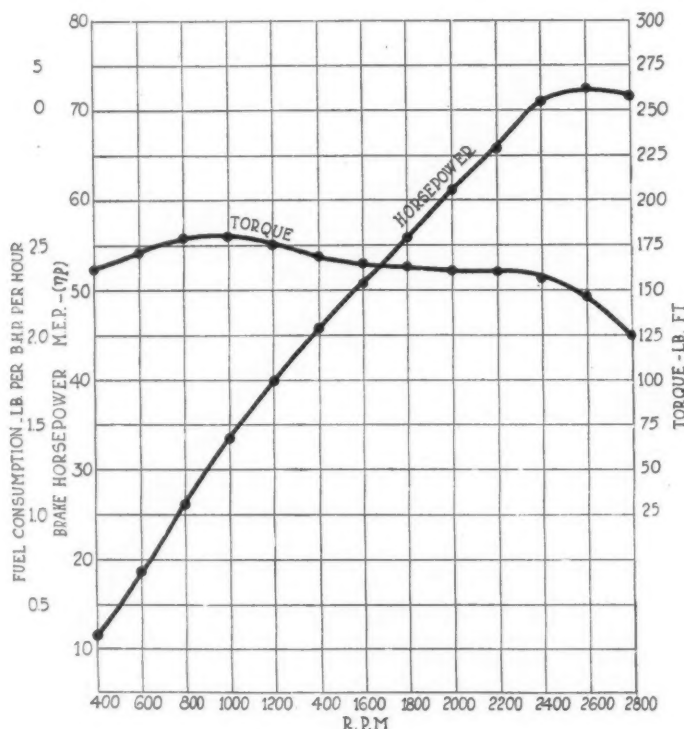
NATIONAL cars for 1920 will have a six-cylinder chassis of 130 in. wheelbase with a new overhead valve engine. Concentration on a single model of this type, in connection with greatly increased plant facilities, will materially enhance the production possibilities of this Indianapolis concern, which has been noted in the past for cars of exceptional road ability. The 1920 model, which was first put on the boards in the spring of 1917, marks the entrance of the National into the overhead valve class. It has been developed continuously for over two years and embodies, both in the design and manufacturing methods, the results of war-time experience.

While manufacturing considerations have had full weight in the design of this new National product, performance has been the chief aim throughout. With a weight for the touring car of 3600 lb., equipped complete and, in addition, with an engine developing 71 b.h.p. at 2600 r.p.m., a speed range of from 3 to 65 miles per hour is provided on high gear, the ratio

being 4 to 1. Five body designs are mounted on this chassis, the seven-passenger touring, four-passenger phaeton and two-passenger roadster, all selling for \$3150. There is also a coupe at \$4200 and sedan at \$4250.

Extensive additions to the National plant will enable the concern to build practically the entire car in its own shops. The body building departments are now complete and, in addition, the concern will make its own drop forgings. There have also been many additions to the machinery and tool equipment. Tooling up for the new car has been completed and many innovations in the way of inspection methods and in jig and fixture design have put the company in a position not only to manufacture this product on a quantity basis but also to maintain exceptionally rigid standards and consequently strict interchangeability.

The overhead power plant is new throughout, this being the first time that this company has employed a unit of such a type. With a bore and stroke of $3\frac{1}{2}$ by



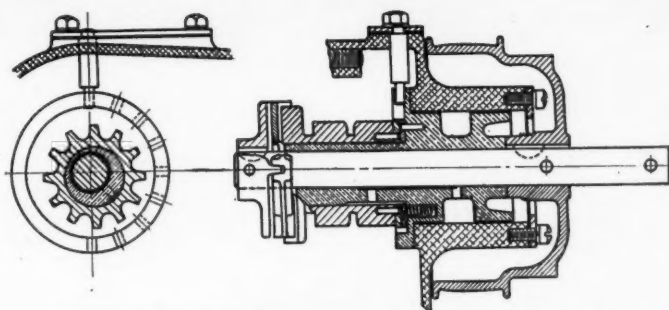
Horsepower and torque curve of new six-cylinder National engine

5¼ in., its S. A. E. rating is 29.4 hp., but it actually develops 71 b. hp. at 2600 r.p.m., the point at which the power peak is obtained. This gives a figure of 0.233 hp. per cubic in. piston displacement at a piston speed of 2275 ft. per min. The horsepower and torque curves indicate great accelerative ability. The torque curve peaks at 900 r.p.m., at which point approximately 180 ft. lb. are available. The high engine torque combined with smoothness produced by a crankshaft of the unusual diameter of 2½ in. gives a lively, smooth engine without noticeable period.

With a curved-cheek, inherently-balanced, crankshaft mounted on three bearings, the only counterbalancing found necessary is the use of small counter weights forged integral with the crankshaft cheeks. The high bearing speeds given by the large shaft diameter are compensated for by a full pressure oiling system that is described in detail below.

The Overhead Valve Engine

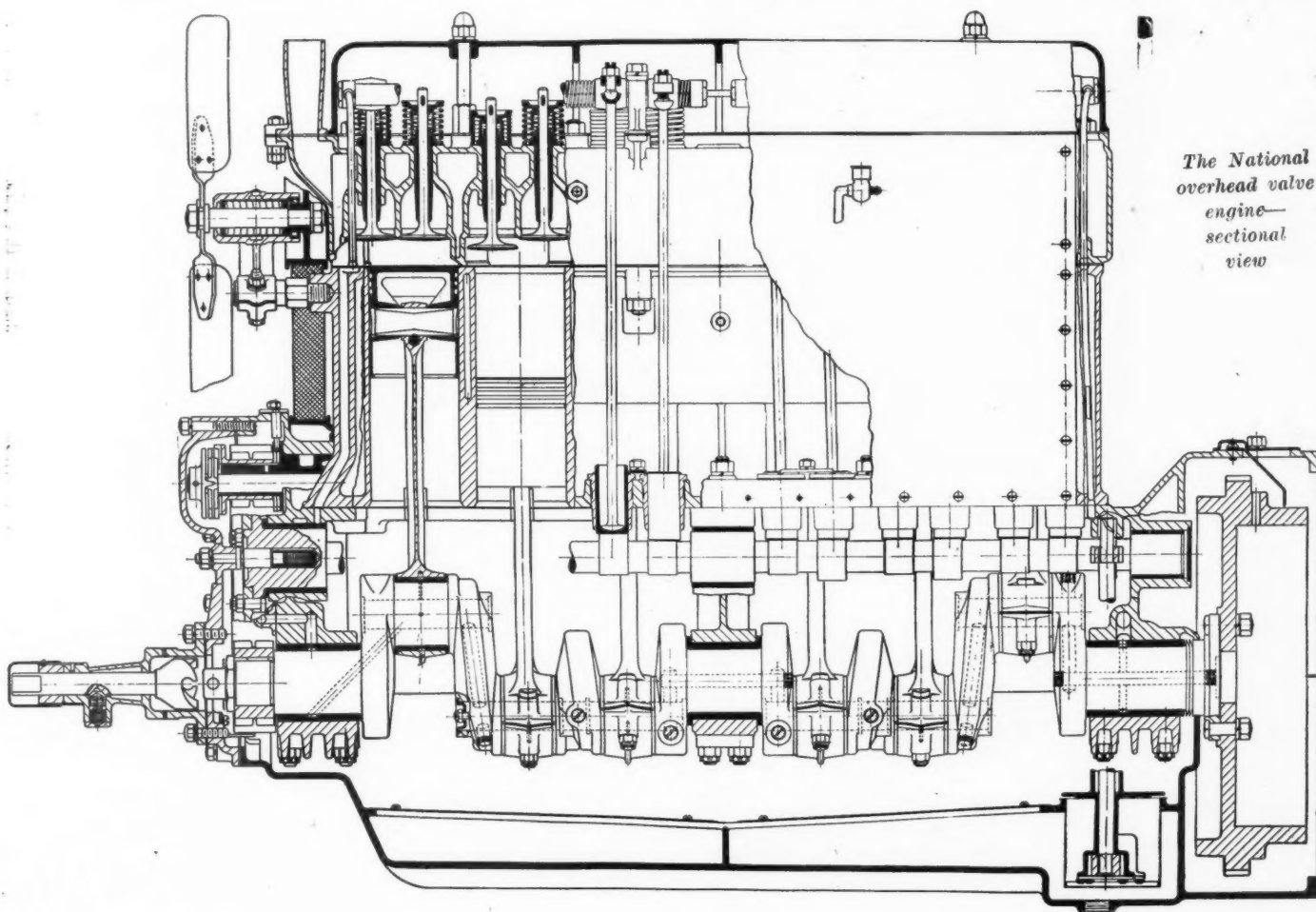
Structurally, the engine represents up-to-date practice in the overhead type of engine that has come into even greater prominence than ever this year. The cylinders are block cast with a detachable head and mounted on a copper-aluminum alloy crankcase. The single detachable head unit contains all of the valves and also carries the valve rocker arm mountings. The left side of the cylinder block is cast with the push rod chamber open, closure being effected by means of a pressed aluminum cover, which gives the necessary protection to the valve mechanism without the weight of the cast iron wall and also permits removal of valve tappets and guides without removing the cylinders.



Detail of sprocket adjustment for National timing drive

By casting the intake manifold integral with the detachable cylinder head, it has been possible to arrange a distribution system for the gases which not only allots the proper proportion of gas to each cylinder, but also provides the heating facilities necessary for low grade fuel in cold weather. The intake manifold extends the entire length of the head on the left side. There is a cross passage between the third and fourth cylinders connecting the manifold with the carburetor, which is on the right side of the engine. The exhaust manifold is also on the right side of the engine and the carburetor is connected to the cylinder block by means of a short elbow cast integral with the exhaust manifold. This gives a hot spot at the initial point of entry of the gases into the intake system, from which point the water jacketing in the head surrounds the intake, giving a practically uniform temperature for the gases in winter and summer.

Some new developments have been made in the valve mechanism, which does not depart radically, however, from the usual push rod and rocker arm style of design, with



*The National
overhead valve
engine—
sectional
view*

the camshaft in the intake. The valves are of large diameter, measuring 1-25/32 in. in the clear, having a lift of 3/8 in. Double springs are used for quietness and quick action. The valve tappets are little inverted pistons of steel, hardened and ground. The bottom ends of the valve push rods are mushroom shaped and sit down inside the tappets. The upper ends of the push rods are cupped to receive a ball and attached to the rocker arm. This construction provides an oil retaining cup at both the top and bottom of the push rod, minimizing wear at these points. It also permits the ready removal of the push rod without disturbing any other parts of the engine, and compensates for any possible misalignment due to slight manufacturing inaccuracies. Valve timing is as follows: Inlet valve opens 7 deg. past top dead center and closes 55 deg. past bottom dead center; exhaust valve opens 49 deg. ahead of bottom dead center and closes 10 deg. past top dead center. All valves are adjusted to 0.003 in. clearance.

Valve Action Described

The rocker arms are drop forgings made to close limits and are strictly interchangeable. They are mounted on two

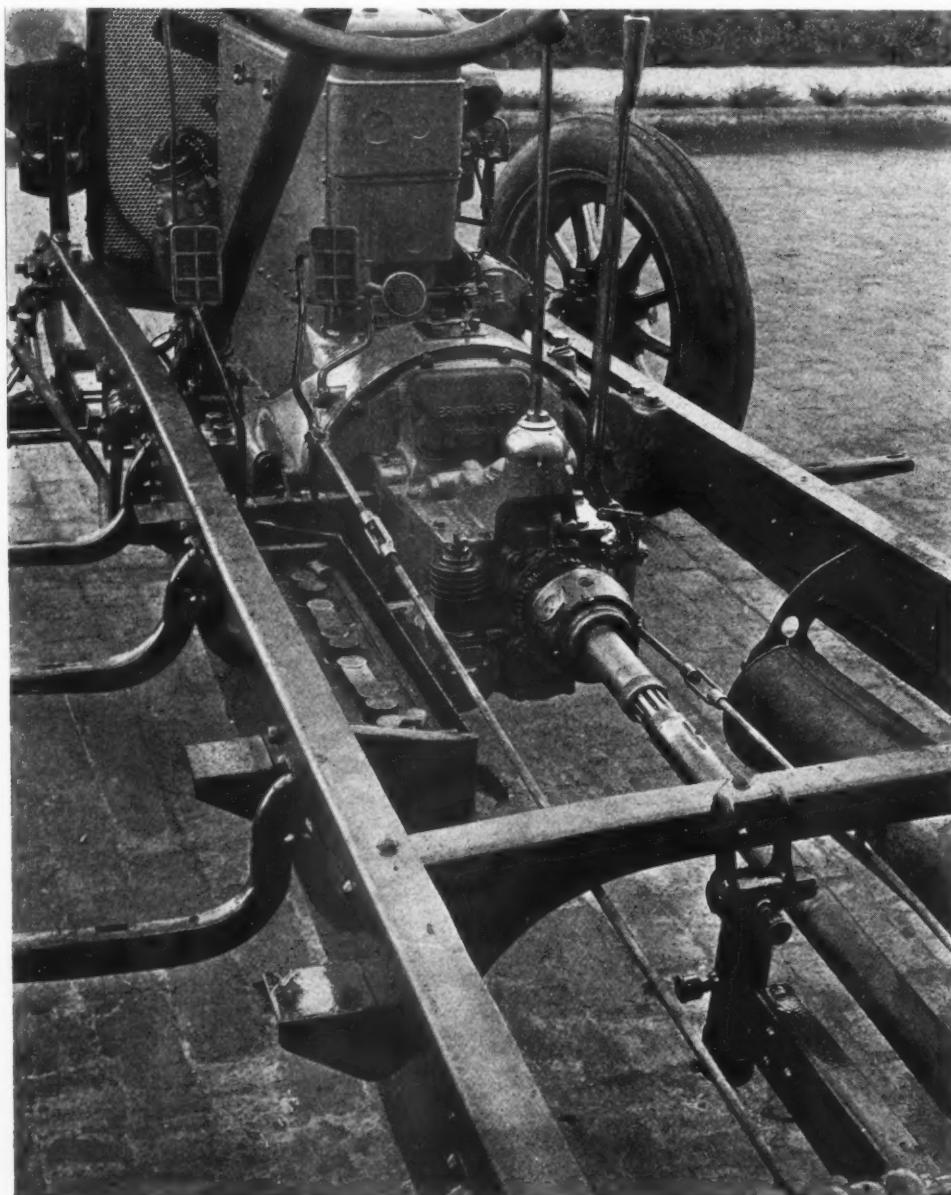
hollow shafts, six of the twelve arms being mounted on each shaft. Between the rocker arms, with the exception of the two at the ends, are spring spacers to hold them in position. This construction permits the rocker arm to be pushed to one side against the spring to permit inspection of the bearing surface. Both the valve push rods and rocker arms are fully enclosed and run in an oil vapor from the crankcase and, in addition, the rocker arms are directly oiled by the pressure system.

The valve action is by a single camshaft located on the left side of the engine and connected with the crankshaft by means of a 1/2 in. pitch by 1 1/2 in. wide Morse silent chain. There are three chain sprockets, one for the camshaft, another for the generator and accessory drive, and a third for the crankshaft.

The Morse chain adjustment is provided to take up slack in the chain by an eccentric adjustment on the generator drive gear. This adjustment can be made quickly, as no accessory has to be moved. On this installation, the generator gear is carried on the outside of an eccentric bushing that supports the generator drive shaft. The shaft

and gear are connected at the front end by a large special Oldham coupling with taper driving surfaces. A thrust plate backed by light helical springs keeps the gear crowded into the coupling so that the taper driving lugs will be tight, eliminating back lash. An opening is provided on the side of the chain case through which the bushing can be reached and rotated to take up chain slack without disturbing any other unit.

Full pressure lubrication takes care of the crankshaft, connecting rod bearings and the rocker arm mechanism. The oil pressure is provided by a gear pump located at the bottom of the crankcase, which forces oil under 15 lb. pressure into an annular groove in the rear main bearing bushing. From this point it enters the hollow crankshaft in sufficient volume not only to lubricate the bearings to which it is conducted but also to reduce the running temperature of the shaft. With the large diameter shaft, the bearing linear speeds are naturally high. This means is taken to overcome any undue heat that might be caused by the high contact speed. The shaft is drilled to provide direct pressure lubrication to the main and connecting rod bearings, the drilled holes varying in number at the different bearings to accommodate the pressure drops along the shaft. The three front connecting rod bearings have two feed holes and the three rear, one. At



Rear end of power plant, gear set and chassis details of the 1920 National

the front bearing, the oil leaves the crankshaft through a groove in the front main bearing bushing which is connected with an adjustable ball-spring pressure regulator. From the pressure regulator, an oil duct leads to the generator drive shaft bearing, while the overflow from the valve lubricates the Morse chain driving the camshaft and generator shaft.

Accessories of the Engine

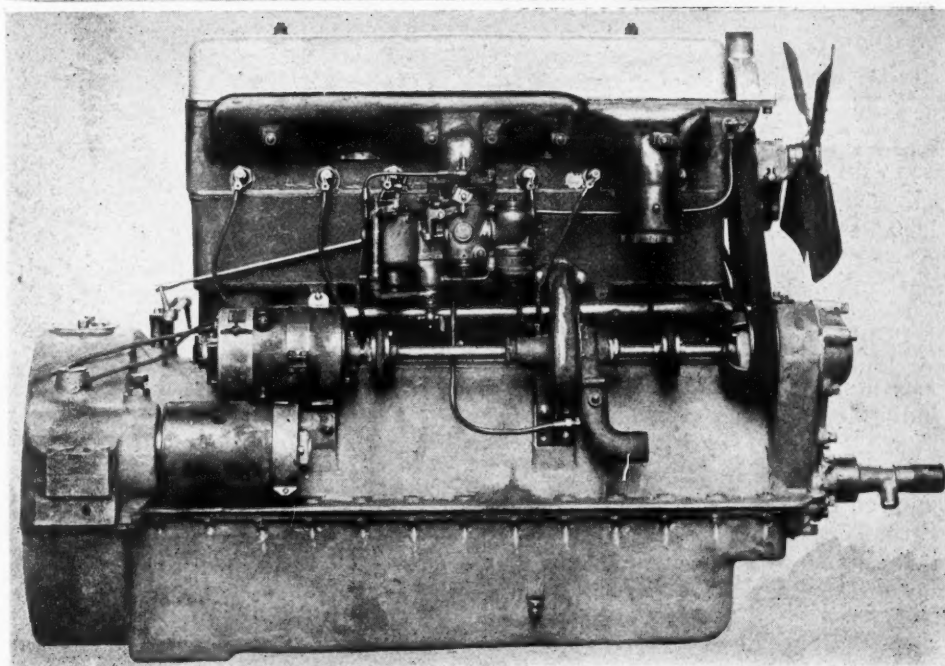
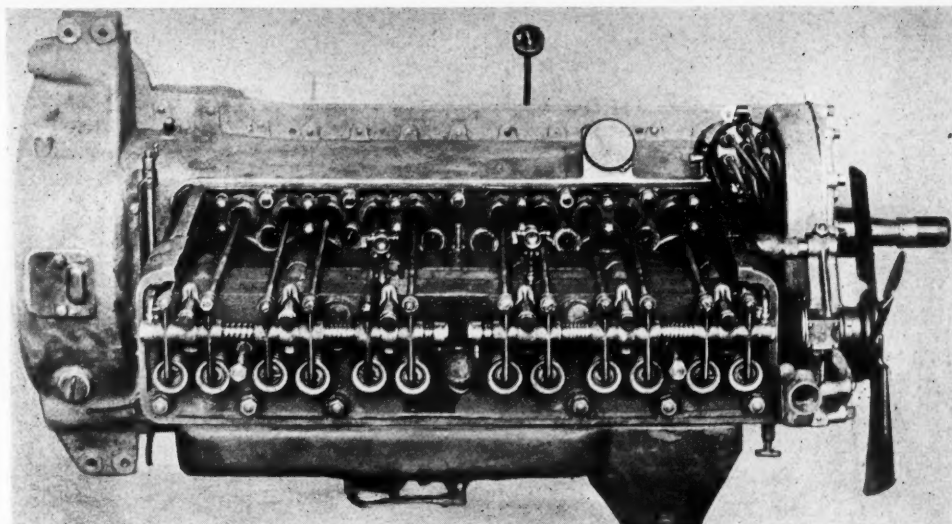
The main oil flow is conducted to the front camshaft bearing and thence to the overhead rocker arm shaft, the connecting channels being corded in the crankcase, cylinder block and detachable head casting. Gaskets between these units serve to make the passage tight. The oil is fed into the rocker arm shafts at the front end of the engine, the lead for this being soldered into the cylinder head.

A "U" shaped connection conducts the oil from the front shaft to the rear shaft, whence an overflow pipe leads it to the front camshaft and ignition distributor bearings, after which it returns to the crankcase, having completed the circuit of the lubricated points. There is no splash in the crankcase, this being a full pressure system with all of the units taken care of as described and the system lubricated by the spray from the end of the rods.

Cooling is by centrifugal circulation, the pump being mounted on the generator drive shaft. The generator is the Westinghouse type and ignition by Delco distributor, mounted on the left side of the engine and driven from the camshaft by spiral bevel gears.

A feature in the mounting of the accessories is that the left side of the engine is absolutely blank, showing only the pressed aluminum cover over the push rods and valve mechanism, and a similar cover over the top. All of the engine accessories such as manifold, spark plugs, carburetor, water pump and starting motor are grouped on the right side and, in order to provide a means of adjusting these readily at night, a motor light has been set in the reverse side of the dash, beneath the hood at the most effective point.

The engine, in addition to being a type that provides the combustion chamber characteristics and valve action necessary to high performance, is also exceptionally adapted to accurate manufacture on a quantity scale. In manufacture, the cylinders are reamed and the pistons are

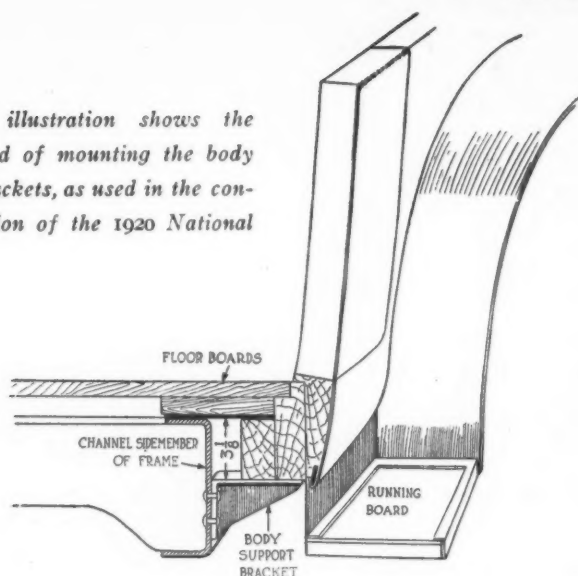


The National Six engine—The upper view shows the push rod and head covers removed. The lower illustrates the mounting of all accessories on one side

ground, while the bearings are all straight broached and burnished. The horsepower tests were made at a compression pressure of 87 lb. The compression at first intended was 92 lb. but it was eventually reduced to 87, at which point it now stands. The weight of the engine is 750 lb., giving approximately 10 lb. per hp.

The power plant is a unit and includes the clutch and gearset. The clutch is a 12 in. single, dry-plate type, contained within the flywheel housing, and the gearset is a three-speed, selective. The drive is through a 1 3/4 in. tubular propeller shaft with two universals. On the gearset is mounted a single cylinder Kellogg tire pump and it is also provided with a lock. The rear axle is floating with a one-piece pressed steel housing. The gears are spiral bevel with a standard reduction of 4 to 1. The axle bearings are Timken throughout. Both the foot and hand brakes are carried on the rear axle, the brakes being 2 in. in diameter and 2 1/2 in. wide. The drive is through the springs with a triangular pressed steel torque arm between the rear axle

This illustration shows the method of mounting the body on brackets, as used in the construction of the 1920 National



and the center cross member of the frame. The wheels are wood, with 32 by 4½ in. tires.

Both the front and rear springs are semi-elliptic and fitted with Hartford shock absorbers all around. The front springs are 2 in. wide and 38 in. long, and the rear 2½ in. wide and 60¼ in. long. Spring squeaks are eliminated by the use of oilless bushings. Only the front ends of the front springs have oil cups and these are of the self-feeding type, having to be filled every 2,000 miles.

A unique feature in the layout of the chassis is the means of protecting the gasoline tank from collision by suspending it behind an enveloping cross member at the rear end of the frame. There is an apron over the tank also to conceal it. Capacity of the tank is 18 gal., the gasoline being fed from the tank by a Stewart vacuum system and a Stromberg carbureter. The tank is provided with a 1½ gal. emergency tank controlled by a small valve on the front of the rear seat.

The body lines of the National Sextet are new, but retain sufficient of the National characteristics to identify the car with this concern. The hood is high and rounding and flows into a flat tapering edge extended along the top of the body in a smooth, unbroken line. The sides of the car are deep, this effect being secured by mounting the body on brackets attached to the outside of the frame, instead of on top of the frame in the usual manner. By this method, the bottom edge of the body has been dropped to within 2 in. of the running board, eliminating the customary running board shield, and the entire body has been lowered more than 3 in. as a result. Individual front fenders are used, these closely following the contour of the wheels and being independent of the running board. Both the front and rear fenders are deeply domed.

A number of refinements are incorporated, such as individually shaped front lamps with integral auxiliary lamps underneath for city driving, a Yale double lock tire carrier on the rear and a hooded ventilator on the cowl, this ventilator being regulated by a small crank above the instrument board within handy reach. The instrument board is walnut with nicked instruments. The forward panel of the rear compartment is finished in solid walnut, with three small lockers suitable for carrying gloves, etc., the auxiliary seats disappearing into the bottom of the panel. A cordovan robe strap is provided and also a tonneau light. There are capacious pockets in all the doors, with the exception of the left front door, which contains a built-in tool compartment provided with a lock, so that it is not necessary to disturb the passengers in getting these tools.

Standard equipment for the car includes motometer, windshield cleaner, Hartford shock absorbers, engine driven tire pump, gearset lock, electric horn, 70-mile an hr. speedometer, glass rear top windows and screw jack. Color options are gray, blue and green.

Only the seven-passenger touring car is in production, but the other models will follow in time to be exhibited at the New York and Chicago shows.

Direct Conversion of Heat Into Electricity

Pol Ravingneaux writes in *La Vie Automobile* of a curious experience he had while testing out a steam truck. The truck having come to a stop, with the result that the boiler pressure rose to 150 lb. and the boiler blew off at the safety valve, he experienced a violent shock due to an electrical discharge, when standing on the ground and touching the truck frame. He repeated the experiment by letting the pressure drop and then rise again, and the result was each time the same. A driver experienced with this make of chassis told him that the experience was a common one and that sometimes even sparks might be drawn from the frame. The electric discharges, however, occur only with rubber-tired vehicles.

The editor of *La Vie Automobile* explains that the phenomenon is due to friction of the steam against the walls of the blow-off valve. While dry gases and superheated steam do not generate electricity when passing over a solid surface, if any liquid globules are present the generation of electricity takes place. The phenomenon was first observed by Armstrong in 1844 and later by Faraday. The

latter investigated especially the generation of electricity by the friction of wet steam under high pressure passing through tubes of different materials. The subject is dealt with in Faraday's *Experimental Researches*, paragraphs 2138 and following, and in Poggendorf's *Annalen* of 1843, page 321. The name tribo-electricity has been given to this phenomenon. Faraday found that the electrification of steam depended upon the nature of the globules of moisture contained in the steam and upon the material of the walls. The phenomenon is the more pronounced if the direction of steam flow is abruptly changed.

Following is an explanation of the phenomenon based on the electron theory. Upon contact the surface tension diminishes, with the result that part of the electrons become free. The negative electrons, which are most mobile, should leave the body more rapidly than the positive electrons. When the bodies in contact differ only as regards their density, the denser gives off the greater number of electrons and consequently becomes positively charged.

Levers Used to Multiply Spring Pressure in Clutch

This is a novelty in the way of clutch manufacture and is well worth a bit of study. The springs are mounted directly on the master ring and the pressure is exerted on the levers, also carried on the master ring, and this ring is driven with the flywheel. The release comes when the clutch sleeve is pulled back and picks up the levers.

A NEW design in clutch practice incorporates the use of levers to multiply the spring pressure exerted in maintaining the frictional faces in contact during engagement. The clutch shown here employs three pressure springs mounted directly upon the main or master ring. The spring pressure is exerted on levers which are also carried by the master ring and multiply the pressure in the ratio of 1 to 8. The master ring and one of the plates are driven with the flywheel through the stud connection, while the other two plates are in driving connection with the main clutch shaft.

When the pressure is on the plates, the clutch shaft is driven at the speed of the flywheel. When it is removed the clutch shaft stops rotating, while the flywheel or engine continues to run. The advantages claimed for this construction—which is employed by the Detroit Accessories Corp.—are three-fold. They are the positive release feature, equal pressure exerted on all points of the frictional surface and ease of spring replacement.

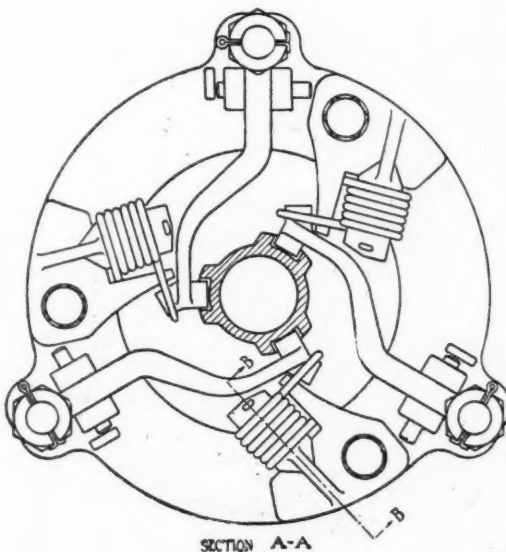
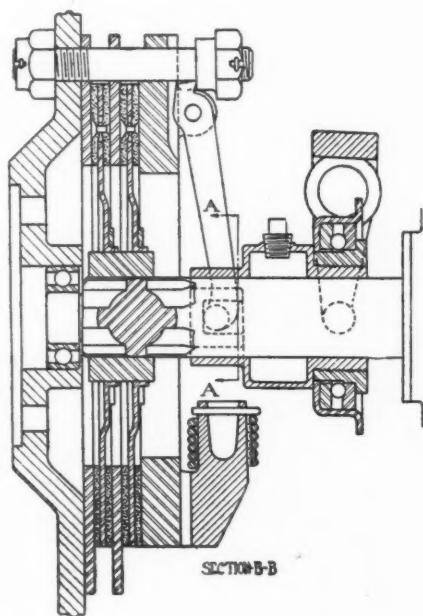
Positive release is secured by so arranging the design that when the clutch sleeve is pulled back it picks up all three levers. The ends of the springs are over the levers, and this causes the springs to come back with the levers when the clutch is released. The springs are



End view of clutch showing the tension springs and levers in position. A feature of this clutch is that the plates are positively released instead of by friction

mounted on the master ring, and this ring is positively pulled back whenever the clutch is released. In other words, friction is not depended upon to move the plates in releasing them after the pedal has been depressed for release.

Equal pressure is secured by the use of three independent springs on three independent levers, thus applying the pressure at three different points. Fracture of one spring does not put the clutch out of commission. A change of springs is simply a matter of removing a cap screw and spring cap. Adjustment of the clutch is made on the nut shown at A. There are three of these, and the manufacturers claim that this adjustment need be made only about once during a lifetime of the clutch.



Sectional assembly clutch, showing mounting of plates and release features

Engineering Features of a Popular British Truck



The Guy truck

The engine has four cylinders, 4 by 5½ in. bore and stroke, and develops 35 b.hp. at 1000 r.p.m. and 50 b.hp. at 1900 r.p.m. It has side valves and a detachable head for each pair of cylinders and varies from conventional practice in the arrangement of the valves and in design of the heads.

By M. W. Bourdon*

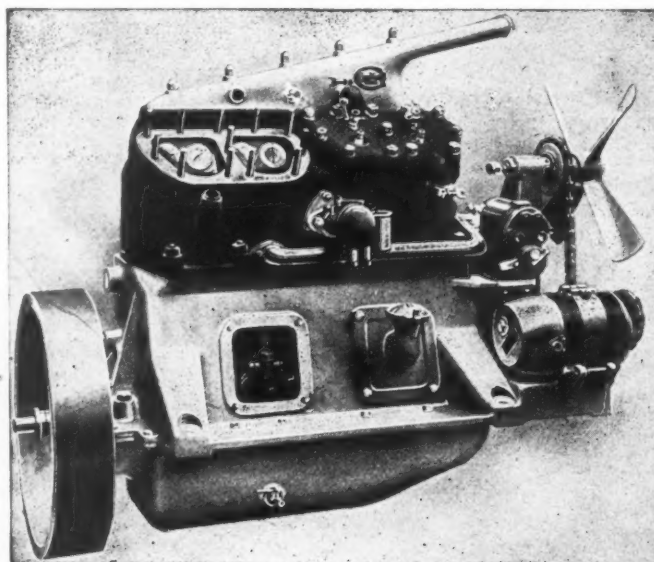
A BRITISH truck chassis that is widely appreciated in its country of origin is the Guy, a product of the Guy Motors Co., Ltd., which has a load carrying capacity of 2 tons. The most striking feature of this chassis is the engine, which has four cylinders, 4 in. x 5½ in. bore and stroke, and develops 35 b.hp. at 1000 r.p.m. and 50 b.hp. at 1900 r.p.m. It has side valves and a detachable head for each pair of cylinders, but varies considerably from current practice in the arrangement of the valves and in the design of the heads.

The valves, instead of being vertical, are arranged at an angle of 60 deg., the stems and springs projecting toward the left-hand side of the chassis into a chamber having a readily

detachable but oil-tight cover. Helical springs of the usual type are used, but the valves are operated from a camshaft—located in the usual position and silent chain driven

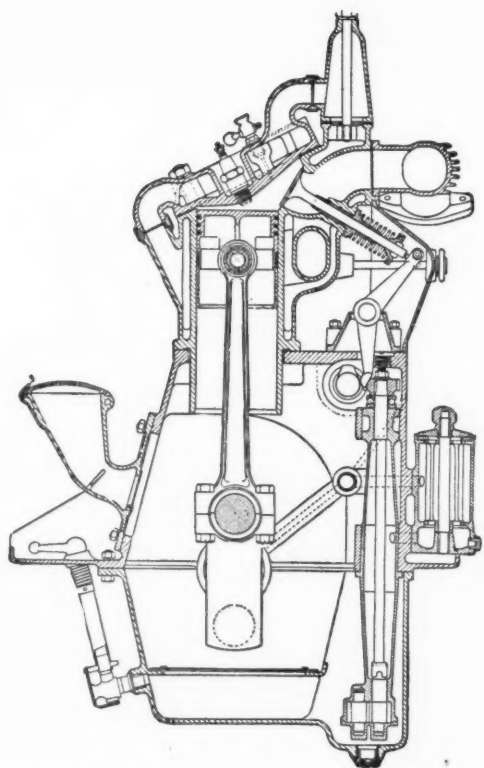
from the crankshaft—through long rocking levers pivoted on a longitudinal shaft passing through the valve chamber. Large ports are formed in the floor of the latter, so that, when the engine is running, the valve gear and valve stems are constantly lubricated by the mist of oil which passes upward into this—in effect—extension of the crankcase. Tappet clearances are adjustable by means of threaded studs passing through the upper ends of the rocking levers; the extremities of the latter are split and the adjusting studs are secured by pinch bolts.

The detachable cylinder heads, instead of having

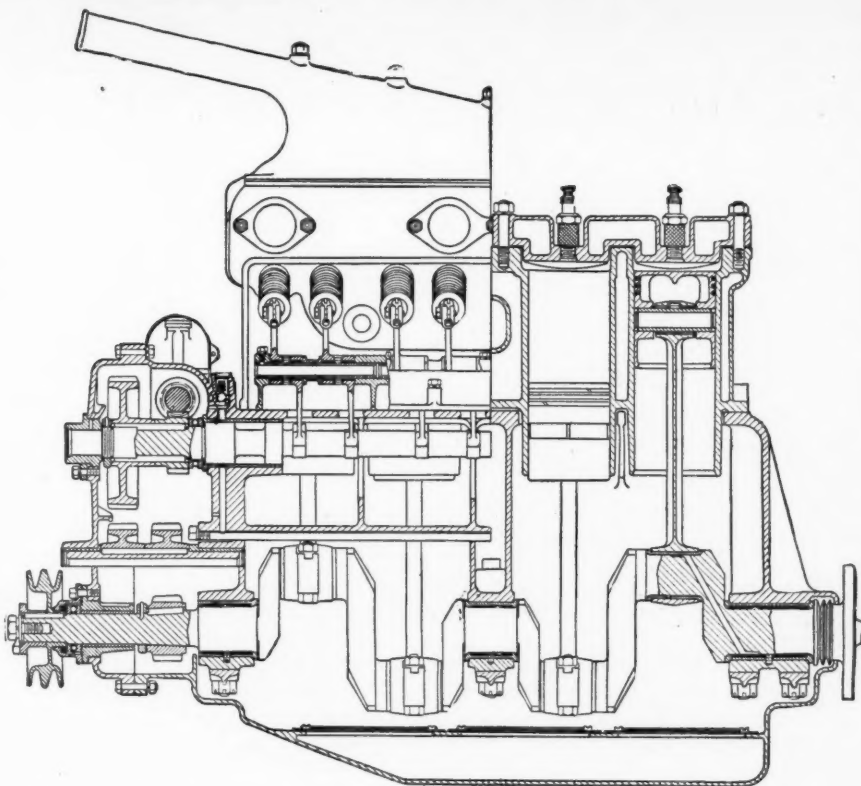


Side view of engine

*AUTOMOTIVE INDUSTRIES correspondent in United Kingdom.



Longitudinal section of the engine showing position of the valves



Cross section of engine showing the arrangement of the valves and valve operating levers and the peculiar shape of the combustion chamber due to the angle of the cylinder head facing

their facings on the cylinder block at right angles to the cylinder bore, are secured to the block at an angle of 27 deg. from the horizontal. This arrangement gives a combustion space without the pronounced "pocket" which exists in the normal arrangement of the cylinder head. The shape of the combustion space thus, it is claimed, approaches more nearly to the ideal than does the usual arrangement. Admittedly the area of the walls exposed to the heat of combustion is greater than that of an engine with overhead valves, but the makers believe that, in adopting their present design, they have secured by a compromise some of the advantages of both side valve and overhead valve systems without the main disadvantages of either.

The cylinder heads also differ from current design in that there is no water joint between their facings and that of the cylinder block, merely a compression joint with a plain gasket. Water circulation from the cylinder jackets to the water spaces in the head, and thence to the cast aluminum riser to the radiator, is maintained through outside connections; short elbows coupled by V section rubber rings and metal clips occur on each of the three units. One advantage accruing from this arrangement is that when the heads are removed there is no large water joint to be broken, or to be re-made when the heads are refitted.

It is claimed, and the claim seems to be justified, that either of the heads can be removed in four minutes and refitted almost as quickly. To assist in this operation each head is provided with two bosses, drilled and tapped, through which pass long hexagon-headed studs. By screwing down these

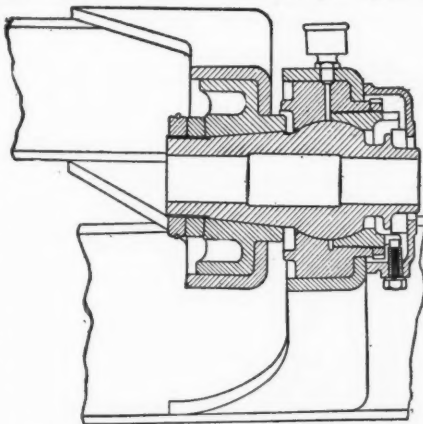
studs when the nuts holding the head have been removed, their lower ends press against the cylinder casting, and the head is lifted clear. There is thus no need for applying any exterior means, such as a screw-driver point or a mallet, to separate the head from the block.

To enable a big-end bearing to be removed, and taken up, if necessary, two large hand holes are provided in the crankcase; by removing one of these and one of the detachable heads, a connecting rod can be cast adrift and passed upward with its piston through the top of the cylinder bore.

Ignition is by magneto, the spark plugs being arranged in an ideal position, i.e., over the center of the cylinder bore. The magneto is driven from a cross shaft at the front of the engine, which shaft also drives, on the left-hand side, the water circulating pump.

The oil carried in the sump is circulated by means of a submerged gear pump, skew gear-driven from the camshaft through a vertical shaft supported at the top of a long casing. The pump with its bearing housing is bolted within the top half of the crankcase and is not attached to the sump in any way, so that if the latter be removed the pump remains in position, though it can then be easily detached if there be need.

The oil is delivered under pressure—regulated by means of a relief valve—through the pump shaft casing, a large external filter to internal ducts formed in the crankcase; by these it is carried to the three main bearings of the crankshaft, which is drilled for the passage of the oil to the big-end bearings. From similar ducts the front bearing of the camshaft and the distribution chain

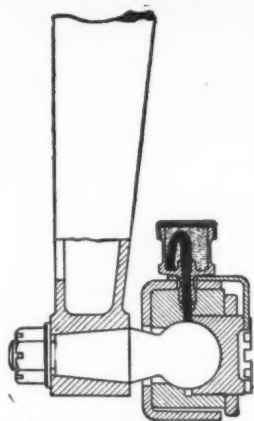


One of the two rear brackets supporting the engine and transmission subframe

are supplied with lubricant, while the other two camshaft bearings have troughs formed over them to catch some of the surplus oil thrown off by the big-ends. The filter referred to is arranged on the left-hand side of the crankcase, and is so designed and situated that it can be instantly removed for cleaning without any of the oil being drained off or wasted.

A leather cone clutch conveys the drive through a short coupling shaft having a fabric disc joint to the four-speed transmission. Quite thin oil is used for the lubrication of the gears, and the lubricant in the box is free to circulate into the stationary casing within which the front universal joint of the propeller shaft is enclosed. This joint is of the star type with phosphor bronze bushes. To prevent the escape of oil from the back end of the joint casing, a stout leather extension has secured to its rear end a bronze sleeve within which the propeller shaft rotates; the sleeve has a liner with its bore grooved to return escaping lubricant to the joint casing. This means has been found quite efficient, and capable of standing up without attention or renewal over long periods of use. Within the joint casing provision is made for governor mechanism having effect upon the throttle in accordance with road instead of engine speed. But this governor is being omitted for the present.

The engine and transmission are mounted on a sub-frame, which is supported from the main frame by three spherical bearings. That at the front end is drilled and bushed to form the bearing support for the starting crank, being located at the center of the front cross member of the main frame. At the rear end the sub-frame is carried on ball extensions of two hangers, which are suspended



The front spherical bearing of the three-point suspended sub-frame

from a tubular cross member and are free to rotate thereon. All three spherical bearings are adjustable and provided with large oil cups with wicks leading to the bearing surfaces.

Distortion of the main frame is thus prevented from reaching the power and transmission units, which, as one of the accompanying illustrations shows, it is possible when a complete overhaul is in progress to lift the main frame clear of the sub-frame unit, leaving the latter resting upon four jacks. Obviously the spring bolts and the steering and brake connections must first be removed.

At the rear end of the open propeller shaft is a second universal joint of the sliding block type with renewable steel facings in the housing. This joint also is automatically lubricated, the oil reaching the interior of its stationary casing from the back axle. The last-mentioned also forms the source of lubricant supply to the plain floating bearings of the rear wheels, which are supported on sleeves projecting from the axle casing extremities.

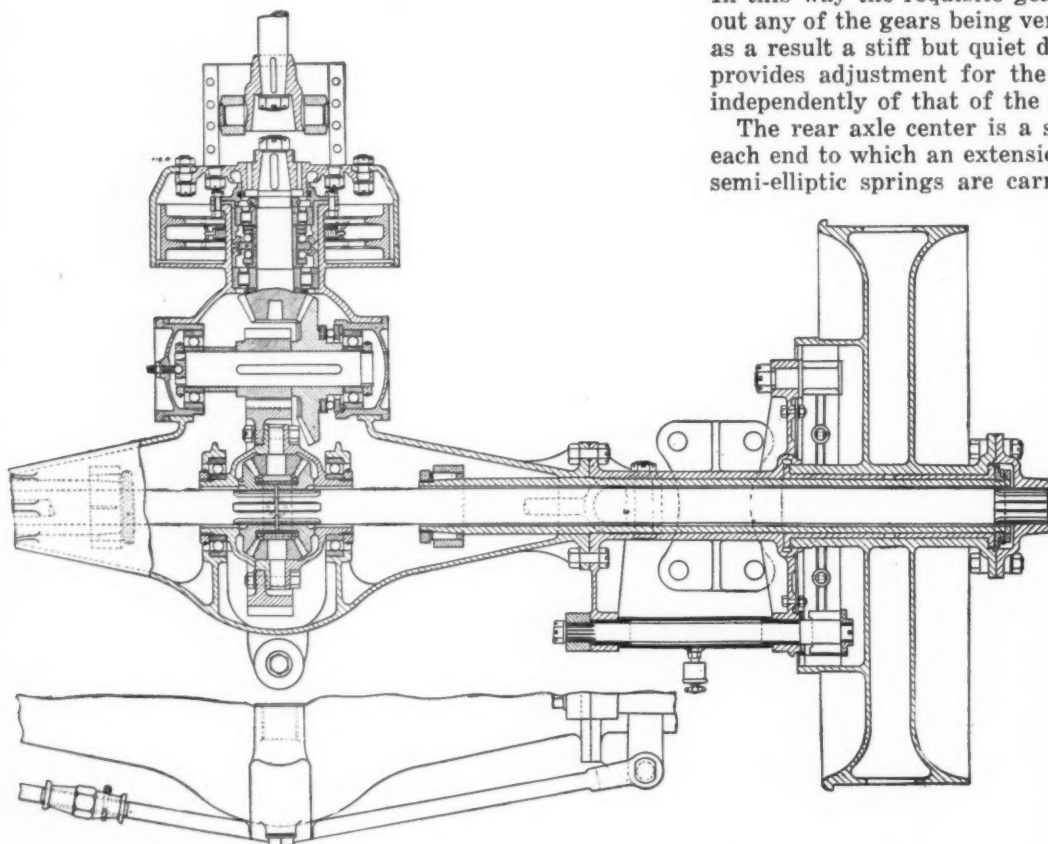
Immediately behind the rearmost universal joint is an expanding type pedal brake, the shoes of which are actuated through a spring link attached to the cam-operating lever. The object of this spring link is to prevent skidding of the back wheels due to excessive pressure being applied to the brake. The maximum pressure transmitted by the link can be adjusted so as to provide the desired braking effect.

The drum upon which the brake shoes operate is carried at the front end of the bevel pinion shaft; this pinion meshes with a small crown wheel on a ball bearing countershaft, which also carries a straight-toothed spur pinion engaging with a gear wheel surrounding the differential. In this way the requisite gear reduction is attained without any of the gears being very dissimilar in diameter, and as a result a stiff but quiet drive is obtained. The design provides adjustment for the meshing of the bevel gears independently of that of the straight-toothed pinions.

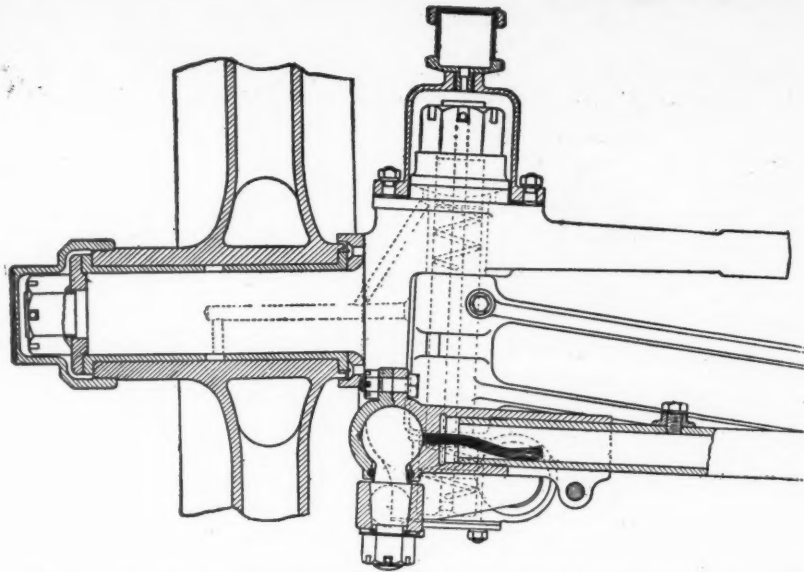
The rear axle center is a steel casting with a flange at each end to which an extension is bolted. The underslung semi-elliptic springs are carried by stirrup bolts passing

round each axle extension and the oil in the back axle serves to lubricate automatically the leaves of the springs. For this purpose an oil-hole is drilled through the casing above the center of each spring, which has no dowel pin, while grooves to convey the oil are ground on the contact faces of the leaves. The wheel brakes are also of the internal expanding type, operated by a hand lever which is secured to a bracket on the main frame, though the gear lever is carried by a tubular extension from the right-hand side of the transmission casing.

The steering, which is of the worm and full worm wheel type, has a noteworthy feature, the ball joints of the tie rod being



Section of the rear axle and transmission brake. The gear reduction is by means of bevels and straight toothed pinions



Part sectional view showing the plain front wheel bearings and the method of lubricating the steering tie-rod ball joints from oil supplied to the interior of the rod

lubricated by oil introduced into the rod and fed by wicks to the bearing surfaces of the balls and sockets.

Cast steel wheels are fitted, those at the back having the usual twin tires, 720 x 100 mm. (approx. 29 x 4 in.), single tires of the same size being used at the front. The wheel track is 5 ft., the wheelbase 12 ft., and the minimum ground clearance of the standard model 10 in.

For export, what is termed a "Colonial" model can be supplied; this has a minimum ground clearance of 12 in., and a specially arranged exhaust outlet whereby water to a depth of 2 ft. 6 in. can be passed through without "choking" the engine.

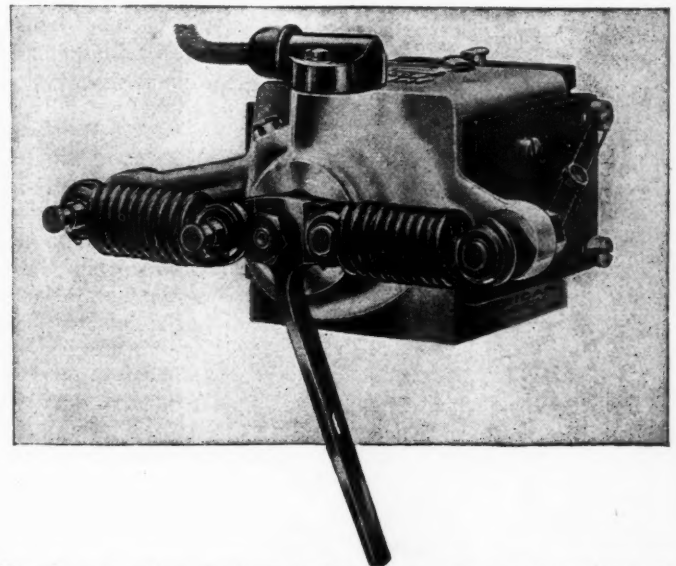
THE scheme for the erection of a large hydroelectric works at Tange, Denmark, to supply the whole of central Jutland between Djursland and Salling, previously suspended owing to difficulties arising from the war, is now to proceed, and a company has been formed for this purpose.

New Design High Tension Oscillating Magneto

A MAGNETO which comprises all of the components of regular ignition magnetos, except the distributor used with multicylinder magnetos, but instead of having a rotary armature, its armature is operated from the engine by means of a stud, a trip-lever and a pair of powerful coiled springs, is a new design by the American Bosch Magneto Co. It is a special design for use on the Fairbanks-Morse Z engine and will be known as type AB-33ED 1.

The magneto frame is cast of aluminum, and includes the driving end plate with arms for holding the studs of the trip lever spring. The pole shoes and drive shaft bearings are cast in the magneto frame. The rear end plate is of cast iron, and acts not only as a bearing for the rear end of the armature, but also as a pole piece for the two magnets. The rear end plate carries the interrupter housing, inside of which is fastened the interrupter cam. It also carries an oil cup with a wick for lubricating the bearings.

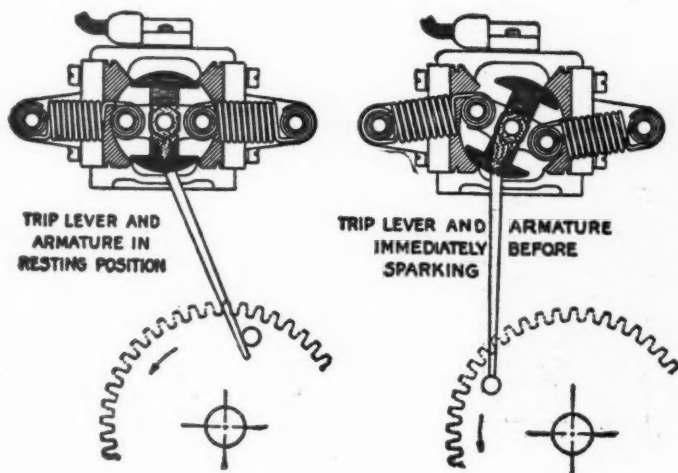
The interrupter is of the standard Bosch type (anti-clock) except as to the material used for the contact points. The armature rear shaft, together with the condenser, is similar to the corresponding parts in other



Bosch magnetos, but plain bearings are used instead of ball bearings. The standard collector or slip ring is used on the armature drive shaft, and is held in place by means of a spring ring.

Different sized trip levers are used on the different horsepower engines, and the larger engines are furnished with a hand-trip lever for starting.

The magnets on this type of magneto are permanent flat magnets, and are screwed both to the rear plates and to the pole shoes. The screws which hold the magnets to the pole shoes and rear end plates have holes through their heads for wire seals. A grounding brush in a brass holder is located at the rear end of the top face of the magneto frame, just in front of the oil cup. A pressed steel end cap is applied to the interrupter housing. The carbon collector brush is mounted in a rubber brush holder which is fastened to the top of the magneto by two screws at the driving end. To insure water-tightness of the brush holders, use is made of one rubberized gasket and two or three felt packing washers.



Power Transmission Groups of the German Trucks

In this article Col. Slade goes rather more into technical details than in his previous stories of these trucks. It is interesting to note that the German practice is rather definitely established on cone clutches, four-speed transmissions and service brakes mounted ahead of the final drive, rather than on the wheel hubs.

By Lieut.-Col. Arthur J. Slade

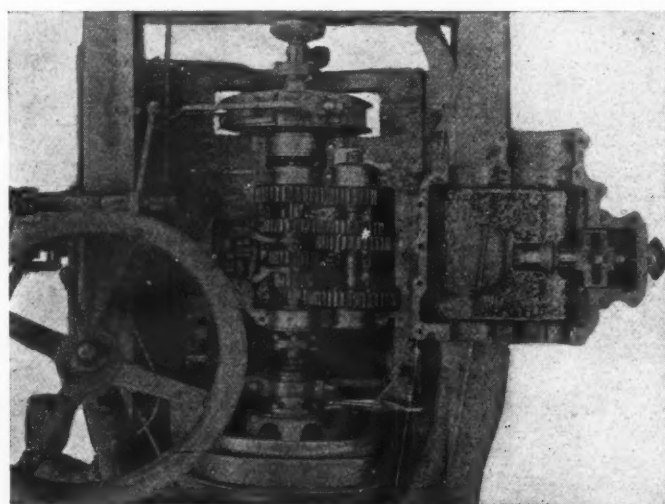
THE power transmission group of the German trucks, as they will be treated in this article, consists of the clutch, gearbox and service brake, which, in the majority of instances, are compactly assembled in a manner well illustrated in the photograph of the Adler.

This truck was evidently in general use in the German Armies and when the used vehicles offered to the acceptance committees failed to reach the required total of acceptable vehicles called for under the armistice conditions a considerable number of new vehicles of this make were shipped into Coblenz by rail. The side view photograph of this truck shows its complete and well equipped appearance.

The clutch is of the cone type, as is practically every one of the clutches found in the collection, consisting of a cast spider, with leather facing and an inclosed clutch actuating spring. A fibre faced pad mounted on a lever pivoted at its center and provided with a spring at its outer end serves as a clutch brake by reason of the clutch spider coming into contact with same when withdrawn from engagement with the flywheel. This can be seen in the photograph.

The transmission proper has four speeds, being mounted on D. W. F. ball bearings throughout, and the gear reductions from engine to rear wheels, including the reductions of the jackshaft and final chain drive, are 14, 25, 39 and 51 to one.

Back of the transmission is mounted the service brake of the contracting type, the drum of which is cooled by water led from a tank on the dashboard through a manually-operated drip cock into a funnel on the forward end



Adler transmission

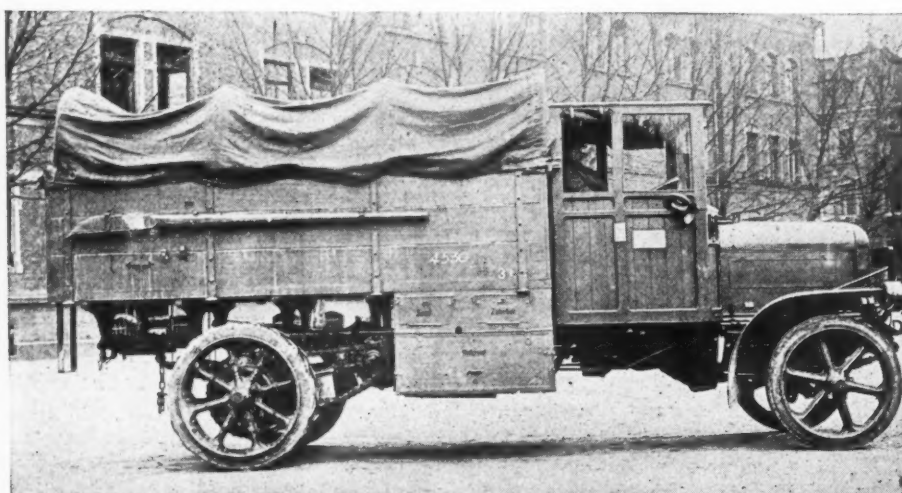
of an iron tube, the rear end of which discharges into the interior of the brake drum. It will be noted that the couplings between clutch and transmission and connecting the transmission shaft to the propeller shaft are of the spider and disk type.

The Arbenz chain drive is one of the minority, having what seems from its external appearance a disk clutch.

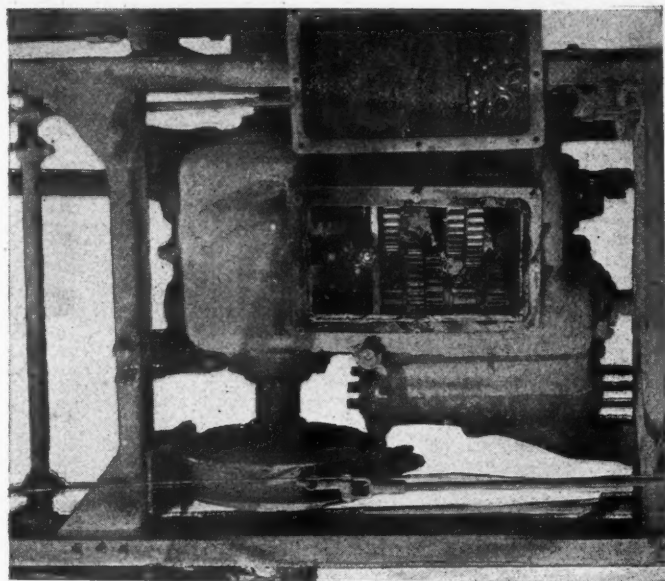
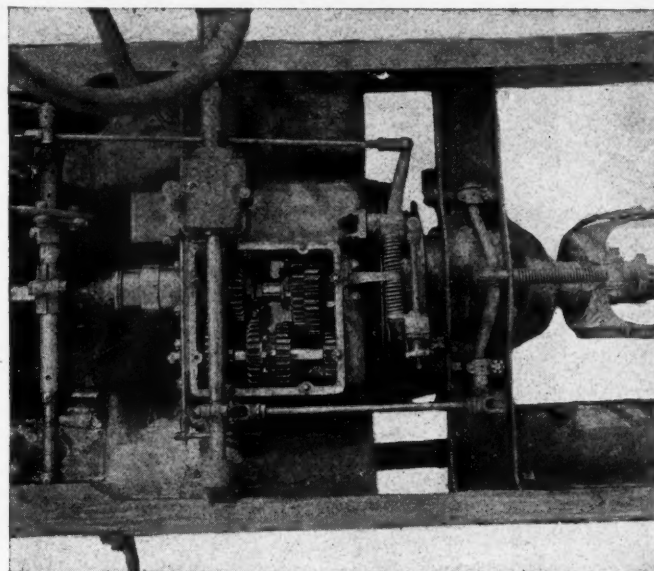
The flywheel has fan-shaped spokes, and the clutch, whose housing is scarcely 7 in. in diameter, is bolted thereto, and is provided with a clutch brake. The gearbox is constructed integrally with the jackshaft unit, as shown in the photograph.

The four forward speeds are all indirect drive, the ratios from engine to rear wheel being 17.5, 21, 31.5 and 61 to one. A single transmission brake is mounted on an extension through the side of the case of the differential hub.

This truck is built at Zurich, Switzerland, and the influence of the Saurer design can be detected in the transmission and jackshaft arrangement. The shaft drive Arbenz appears to have the same clutch with the transmission mounted directly behind, im-



Side view of Adler

*Arbenz transmission**Audi transmission*

mediately in the rear of which is an external contracting shoe service brake. Although of the same rated capacity, 3000 kg., the total transmission reductions on this truck are only 8, 12, 20 and 46 to one.

The 2-ton Audi has an aluminum cone clutch, leather faced, whose shaft is carried into a universal joint at the front end of gearbox. Four forward speeds are provided, having total reductions of 16, 24, 35 and 64 to one, the shafts being ball bearing mounted. The service brake is mounted back of the gearbox and attached thereto, being of the contracting shoe type with radiating flanges. The transmission shaft connects through a universal joint to the propeller shaft and the photograph shows the arrangement and relation of the units.

The Benz is another completely equipped truck, which, in its 4000 kg. capacity type, was delivered in large quantities. Its side view photograph is shown.

This vehicle has a disk clutch with a conical clutch brake, and its gearbox is integral with the differential housing. On the jackshaft at either side of the case are mounted the service brakes, which are of the external contracting type. The total gear reductions are 15, 22, 33 and 50 to one.

The Bergman employs a reversed cone clutch with clutch brake, the transmission being placed directly in the rear and connected through a sliding joint and two steel disk couplings. The reductions are 16, 24, 40.5 and 71 to one, and a universal joint is introduced between the transmission and the differential housing, which is suspended from frame cross members, the jackshafts not being enclosed in housings, but supported at their inner ends by the differential and at their outer ends by bearing hangers attached to the side rails of the frame.

Both of the Bussings have reversed cone clutches, water cooled service brakes and the four-speed transmissions give them gear reductions similar to other makes of like capacity.

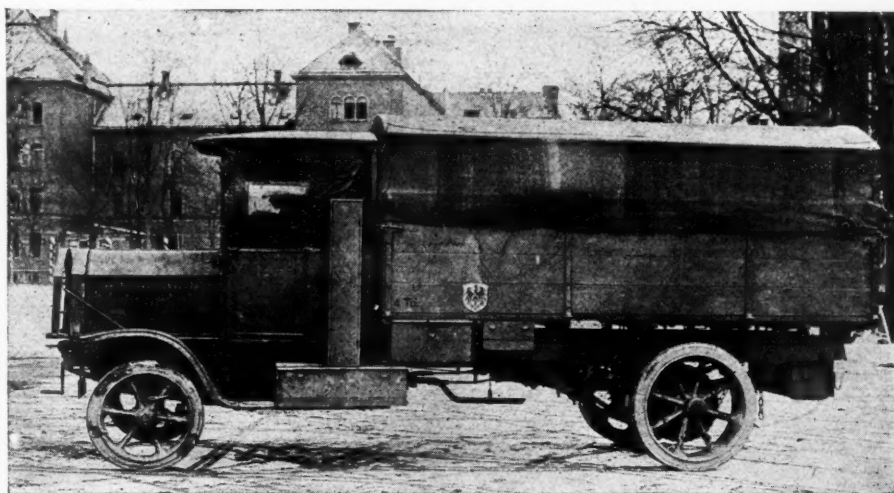
The 3000 kg. capacity chain drive Daimler employs a reversed cone clutch engaging in a pressed steel cone member formed to act as a suction fan bolted to the flywheel. The

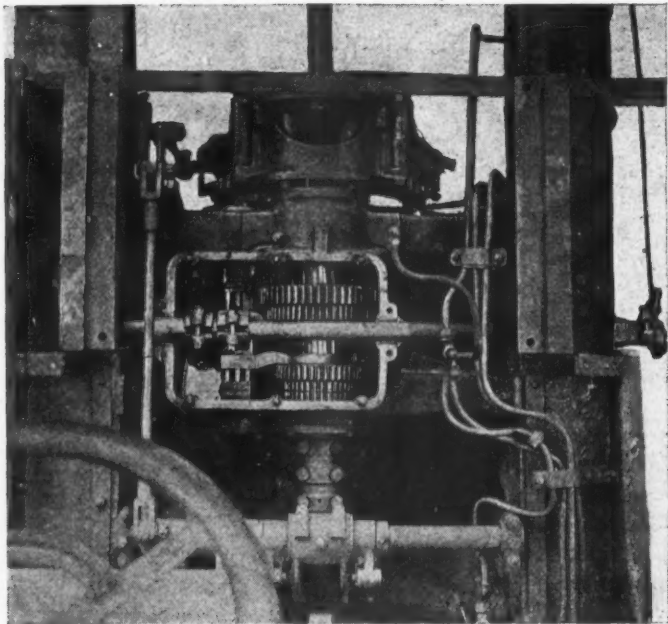
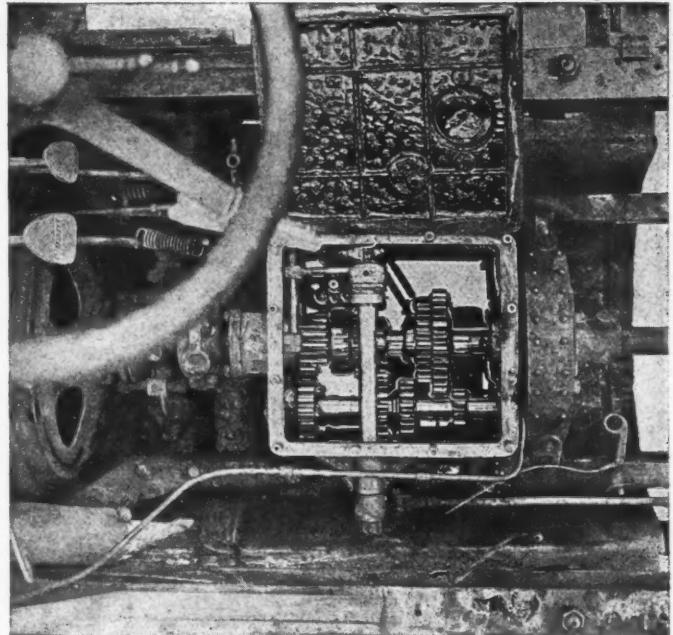
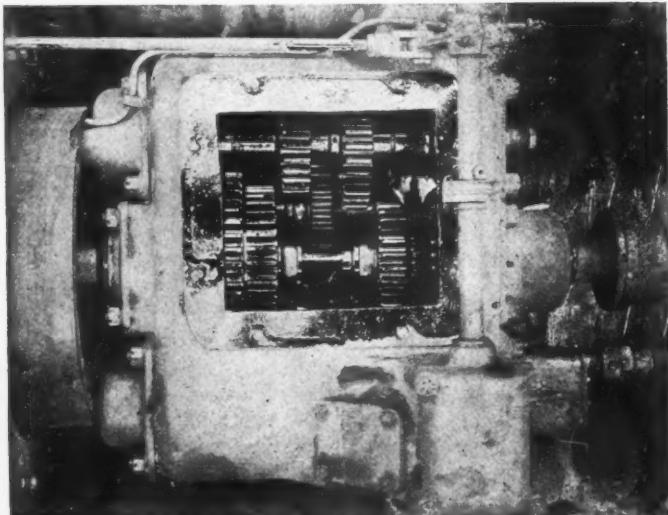
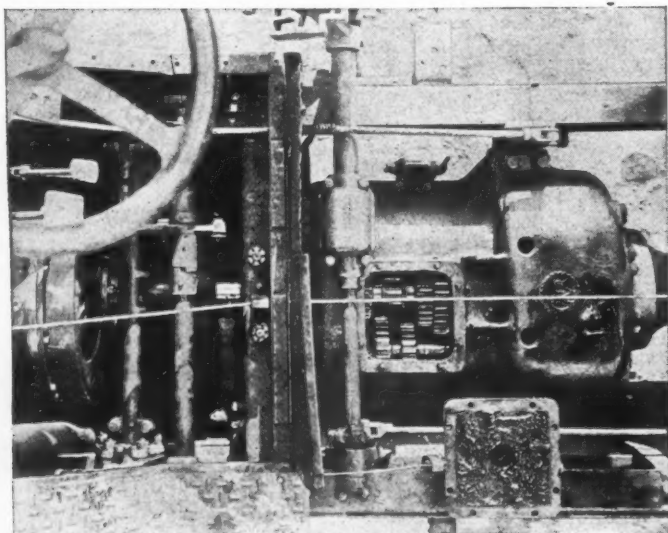
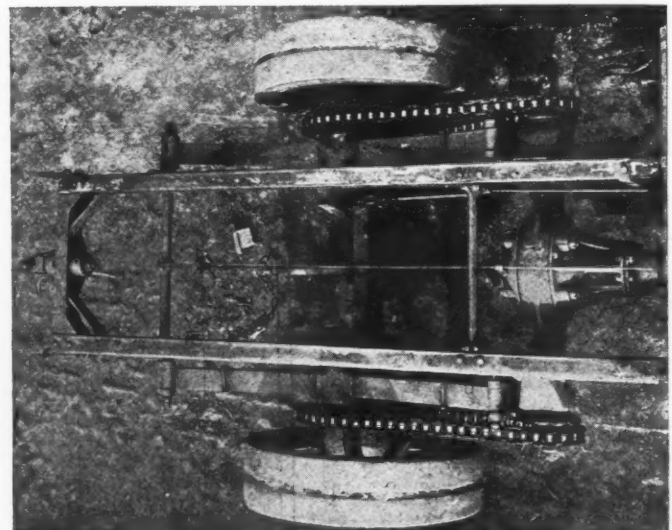
clutch shaft is carried through a slip joint and flanged coupling to the transmission in which the gearshafts are mounted one above the other. The photograph shows the assembly from the clutch back to the service brake, the contracting shoes of which act on only about one-half of the drum circumference.

The propeller shaft running back to the jackshaft is provided with universal joints, and is exposed, while the jackshaft housing is of a rigid case construction, supported from the frame side rails. The total gear reductions are 14, 21, 30 and 60 to one.

The large internal gear drive Daimler of 5400 kg. capacity has the same transmission units, but its final drive gives it gear reductions of 16, 24, 42 and 80 to one.

The Hansa Lloyd has a reverse action cone clutch, faced, as are a number of other cone clutches, with some woven asbestos material. The transmission is mounted on the same sub-frame with the engine, and two universal joints are found between the transmission and jackshaft at either end of the propeller shaft, being of the flange and disk type, and a universal is also placed between the transmission and clutch. The service brake consists of steel bands with cast-iron shoes, acting on a water-cooled drum. The photograph shows the general arrangement, and it is to be noted that this truck has the greatest gear reduction of

*Side view of Benz*

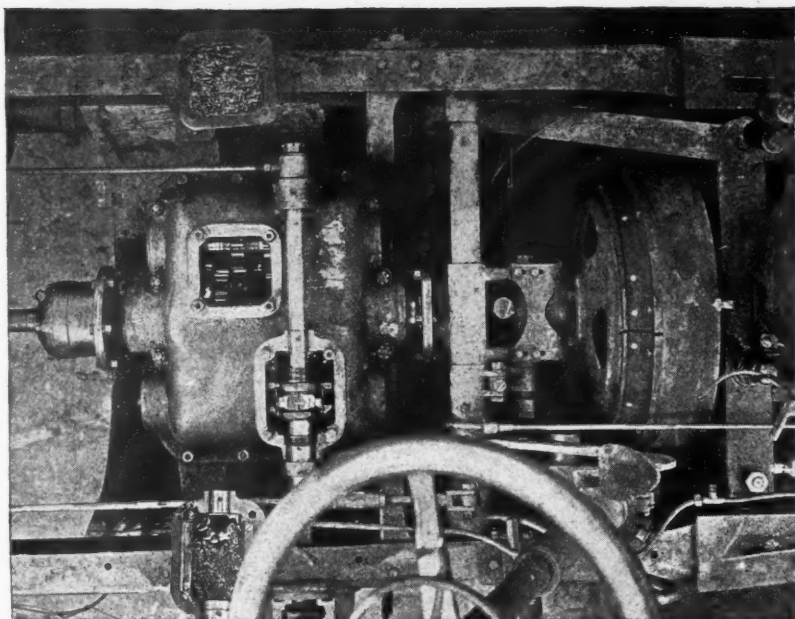
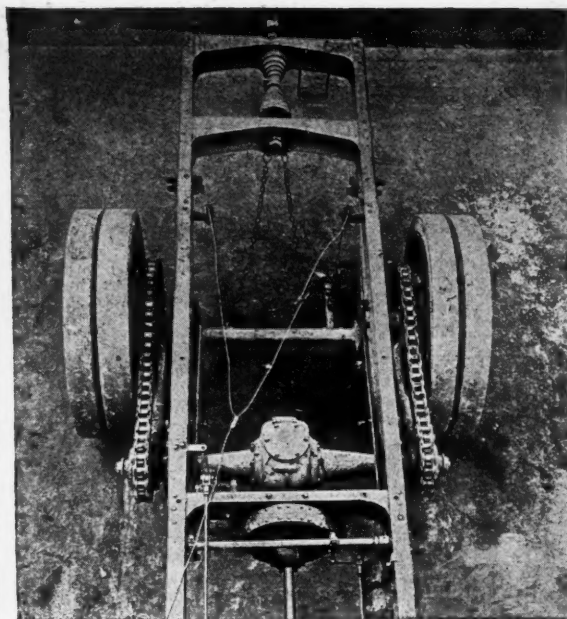
*Daimler transmission**Hansa Lloyd transmission**Horch transmission**Vomag transmission**Rear axle of Vomag*

any in the collection, the ratio being 18, 32, 56.5 and 106 to one.

On the Horch shaft-driven truck the cone clutch is connected to the transmission through two universal joints and a sliding sleeve. The gearbox is of the barrel type, with shaft bearings of the annual ball type held in bolted-on caps. The service brake is of the internal expanding shoe type actuated by a cam, and a water pipe connection for cooling is provided, being supplied from a tank on the dash. The reductions are 14, 20.5, 36 and 68 to one.

The Podelus, 3000 kg. capacity, has a reversed cone clutch with a universal joint connecting to the transmission. The housing of the latter is split on the line of the shaft centers and two hand plates are provided in the upper half.

The driving shaft has a universal joint at each end and the service brake is mounted just in front of the jack-shaft, being of the external contracting type, having cast-iron shoes attached to steel bands. The gear ratios are 11, 18, 30 and 47 to one. The photographs show the arrangement and mountings.

*Podelus transmission**Rear axle of Podelus*

The Vomag chain-driven truck employs a reversed cone clutch faced with fabric and having a clutch brake which is drawn up to the clutch hub when the pedal is depressed. The connection to the transmission is through a laminated ring coupling having twelve plates forming the ring.

The transmission is mounted directly in the rear by three point suspension and the housing is split on the shaft centers. The rear of the housing covers the service brake, of the external contracting type, water cooled, and the rear wall of this housing covering the brake is carried

down to form a support for a ball and socket joint for mounting the propeller shaft tube. The general arrangement can be seen in the photographs, which, however, do not permit the details to be seen. The gear reduction ratios are 15, 23, 34 and 71 to one.

It will be noted that German practice is rather definitely established on cone clutches, four speed transmissions and service brakes mounted ahead of the final drive rather than in the wheel hubs, although in the details of application there is, of course, very wide variation.

New Heavy Fuel System for Trucks and Tractors

A NEW fuel system for trucks and tractors, which, according to the manufacturers, will operate satisfactorily on any liquid fuel having an end point below 650 deg. F., has been developed. The fuels which come within the limit mentioned include gasoline, kerosene, distillate and alcohol.

The fuel is first finely divided mechanically at the carbureter spray nozzle, by means of a simple metering device. At the spray nozzle a high velocity is imparted to the fuel globules, with the result that they leave the air stream and continue on into the exhaust-heated vaporizing chambers, where they are vaporized. Only the fuel stream and continue on into the exhaust-heated vaporizer causes a constant outflow and therefore a pressure gradient opposed to an inflow of air.

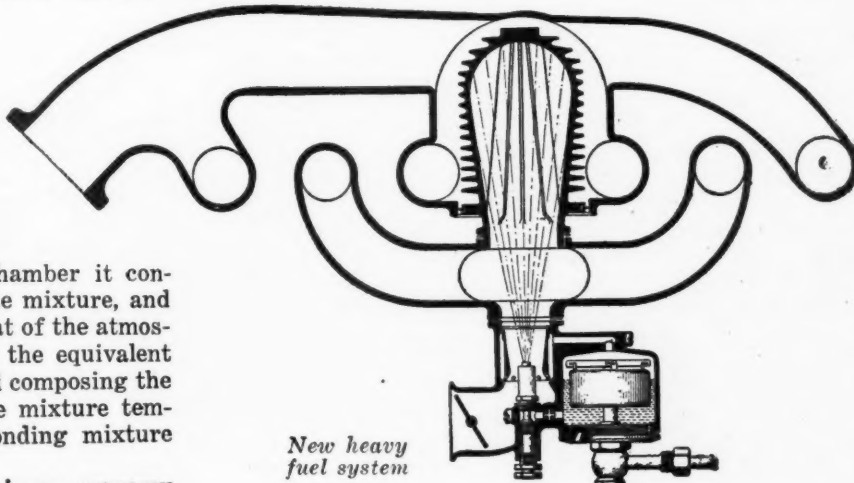
It is notable that vaporization proceeds under the condition of minimum pressure, and full advantage is taken of the direct relationship between pressure and boiling temperature of a liquid to minimize the temperature rise necessary to the process of vaporization.

As the vapor issues from the heated chamber it condenses upon contact with the cool air of the mixture, and raises the temperature of the latter from that of the atmosphere by an amount slightly greater than the equivalent of the latent heat of vaporization of the fuel composing the vapor. For this reason, it is claimed, the mixture temperature is far below that of a corresponding mixture formed by heating the whole charge.

When the system is applied to secure maximum economy

of operation, the charge temperature is practically constant, varying only within 3 to 4 deg. F., plus and minus, under all conditions of operation from idling to full load at highest speed. The only change in conditions that can alter the mixture temperature is a modification of the ratio of fuel to air in the mixture. An enrichment causes a rise in charge temperature, since more heat is then given up to the air by the fuel vapor. The converse is equally true. No regulation of the exhaust gas sweeping the vaporization chamber is necessary to maintain a constant fuel temperature.

The system is manufactured by the Stewart-Warner Speedometer Corp.

*New heavy fuel system*



Revolutionizing the Wage and Industrial System in France

There has been much printed of late in the way of small items concerning the industrial changes in France and Italy during and since the war. In this story of present day conditions, Mr. Bradley not only traces these changes from the former undesirable status of the worker, but he throws many sidelights on the reasons the changes have not worked out as well in those countries as was expected by the idealists.

By W. F. Bradley

PARIS, Sept. 1.

DURING the past five years more changes have taken place in rates of pay and general working conditions in the French automobile industry than in any previous period of its existence.

Until the outbreak of war the working hours in practically all French trades were 10 daily and 60 weekly. Overtime was not always paid at an increased rate. These conditions had been in existence for years and seemed to be as established as anything on this earth can be certain.

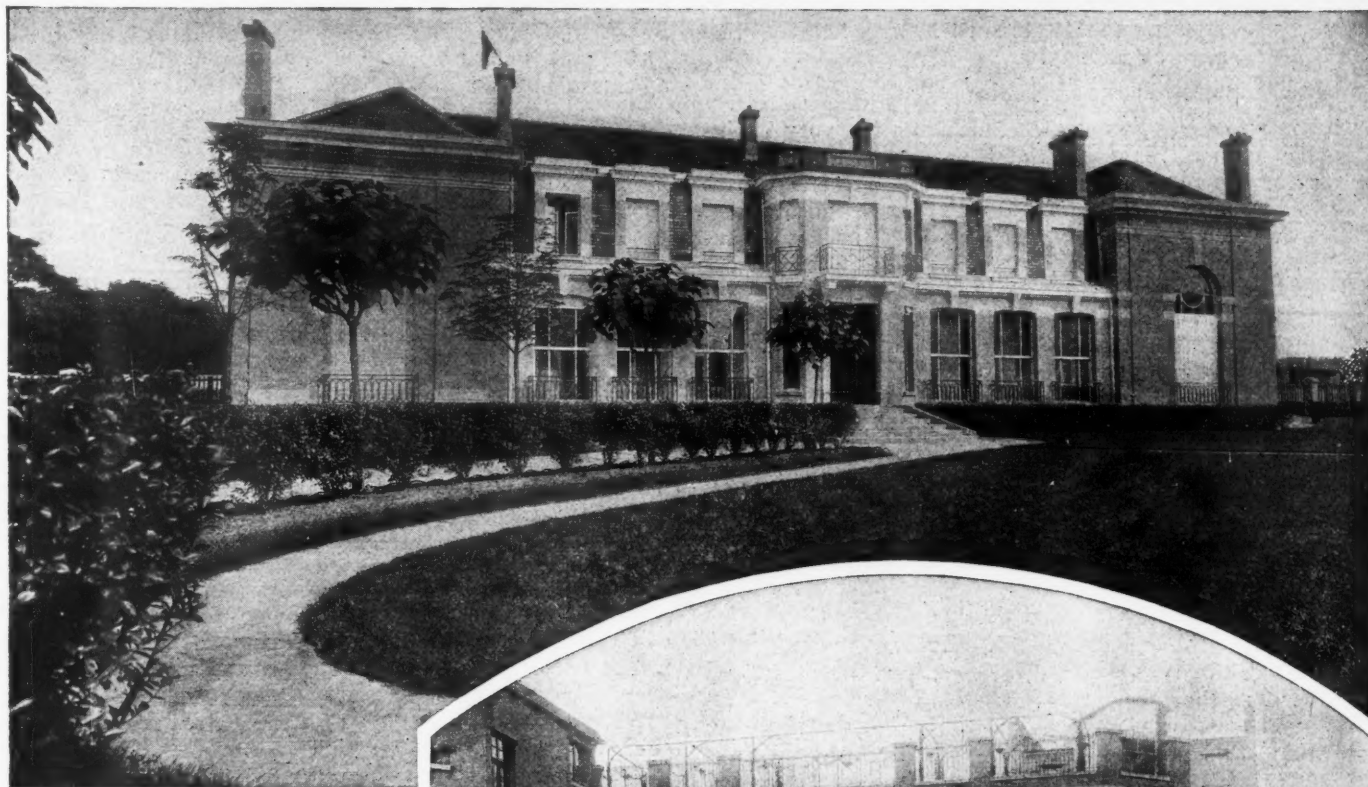
There was a movement for what is known as the English week, or, in other words, for a Saturday afternoon holiday, and although this had been granted by a small number of firms it did not decrease the weekly working hours. In order to gain five hours on Saturday, the men worked an extra hour on each of the five full working days of the week. Under this 60-hour-a-week system work generally

began at 7 a. m. and finished at 6.30 p. m., for it was the usual plan to have at least an hour and a half for the mid-day meal.

With such a long working day men were obliged to live in close proximity to the factories; if they were so far away as to be unable to return to their homes at midday, they were absent at least from soon after 6 in the morning to 7 or later in the evening six days out of seven. For four months of the year they saw their homes in daylight only one day a week.

A Radical Change

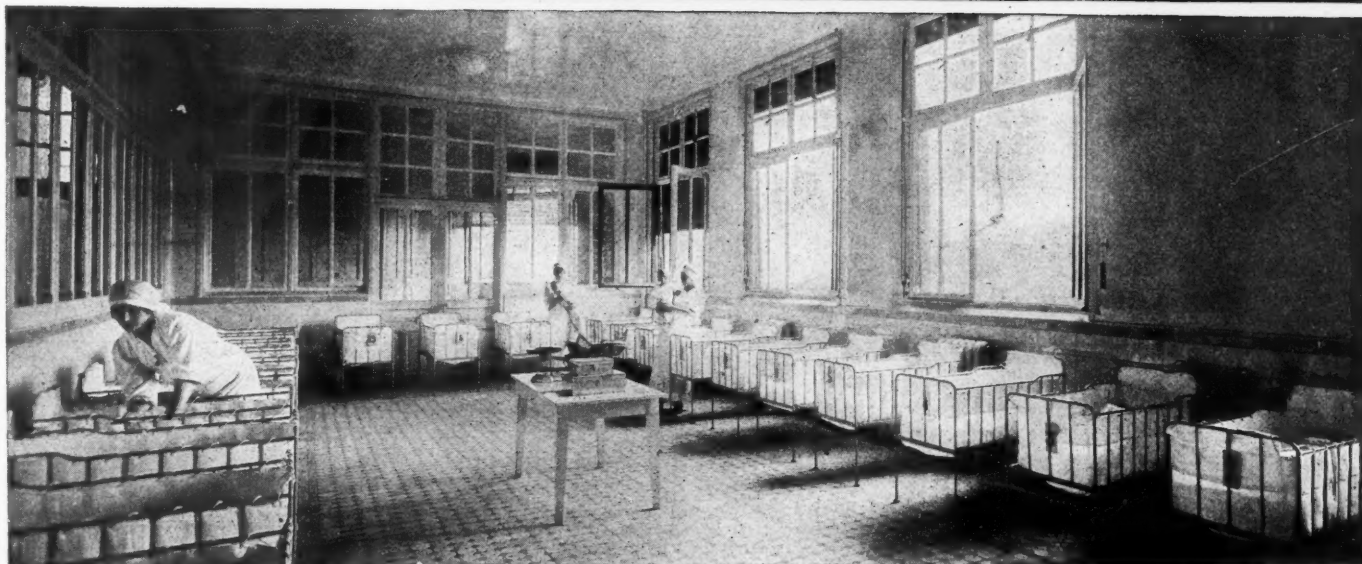
In less than five years this condition has been changed so completely that the working hours now are only 48 per week, and in many cases men who in 1914 were absent from their homes for 12 to 13 consecutive hours, now leave home at 6.30 in the morning and are back again be-



Above—This very desirable residence is the home in which children are cared for while their parents are working in the Citroen factory

To the right—Nursery and infants' school erected by Citroen during the war for the benefit of his workers

Below—There are 30 bright, smiling French babies in these cots. They are from two months to a year old and are owned by workers in the Citroen factory



fore 4 o'clock in the afternoon. This has been brought about by abandoning the established French habit of eating a heavy meal at midday.

Causes Complete Change in Habits

In some factories, where the rule from the very beginning has been to start work at 6 or 6.30 a. m., the men now enter the plant 10 a. m. and eat their midday meal from 3 to 3.30. They leave work at 6.30 in the evening. This involves a complete change of habits and social conditions. Generally, however, French workers prefer to begin early in the day and leave early in the afternoon.

A decrease had been made of 20 per cent in the number of working hours of the French mechanic. This decrease had not been made gradually but was put into effect at one stroke, and was given to men who had never previously known any reduction in the number of working hours. In reality the reduction was greater than 20 per cent, for during the stress of war the working hours had generally been increased to 66 per week. This increase was in effect during 1915 and 1916, and though it officially went out of effect on this latter date in reality, many workers continued it.

Factory Betterment

While working hours have decreased, working conditions have been ameliorated, in very large numbers of cases almost beyond recognition. The change here is not uniform, for while some factories have been rebuilt until they are the equal, from the standpoint of comfort to the worker, of the best in the world, others have grown under the force of necessity and within artificial limits which have left no room for the workers' betterment. These conditions apply to the smaller shops, which, however, will be obliged to follow the general tendency toward betterment.

In addition to these changes, wages have increased. In 1914 a good skilled mechanic in the French automobile industry was satisfied with 25 cents an hour, or \$12 a week of 60 hours. Here and there a man was found who

was paid a cent or two an hour more than his companions, but at the same time there were a certain number who, owing to slight inferiority, or a tighter policy on the part of the employers, did not reach the standard of 25 cents an hour. Unskilled workers were paid from 10 to 11 cents an hour.

By the middle of 1918 wages had increased to 50 cents an hour, or \$30 a week for a 60-hour week, and in June, 1919, the skilled mechanics of France were earning the same wage for 48 hours' work, and in consequence were being paid at the rate of 63 cents an hour. During the same period unskilled workers had jumped from 10 cents an hour to 22 cents in 1918, and to 27 cents an hour in June, 1919.

New Wage Policy

In addition to this, unskilled workers were entitled to an indemnity of 50 cents a day to cover high cost of living, so that, when the war came to a close, a laborer in the French automobile factories was receiving \$16.20 a week, compared with the wage of \$12 a week for a highly skilled mechanic before the war.

It has been contrary to the policy of French employers of labor to pay a standard rate whatever the ability of the man. The system is not uniform throughout the factories and is somewhat complicated. Stripped of non-essentials, however, it really amounts to a recognized minimum rate for each class of worker with a premium according to ability, this premium bringing the total wage to a recognized maximum for that particular class.

The practical result of this is that it enables the employer to encourage merit and energy and it allows some economies to be effected if there is a stoppage for any cause outside the control of the worker. For instance, if, owing to an accident or the lack of power, the men have to stop work in the middle of the morning, they would only be paid at the minimum rate for the lost time and not the minimum plus the premium.

Wages in French Automobile Industry

Minimum Standard Wages

| | Per Hour | Per Day | | Per Hour | Per Day |
|--|----------|---------|---|----------|---------|
| Unskilled workers, men..... | \$0.25 | \$2.00 | Foundry: | | |
| Unskilled workers, women..... | .19 | 1.50 | Moulders..... | \$0.35 | \$2.80 |
| Specialized laborers, men..... | .29 | 2.30 | Aluminum and copper foundry hands..... | .31 | 2.50 |
| General mechanics (skilled specialists): | | | Body work and aviation: | | |
| Adjusters..... | .35 | 2.80 | Band saw operators..... | .42 | 3.40 |
| Adjusters, tracers..... | .37 | 3.00 | Circular saw operators..... | .37 | 3.00 |
| Turners..... | .36 | 2.90 | Planing and other machine operators..... | .35 | 2.80 |
| Milling hands..... | .35 | 2.80 | Wood turners..... | .35 | 2.80 |
| Grinding machine operators..... | .35 | 2.80 | Smiths..... | .36 | 2.90 |
| Planing machine operators..... | .35 | 2.80 | Joiners..... | .35 | 2.80 |
| Gear cutting machine operators..... | .35 | 2.80 | Carpenters..... | .35 | 2.80 |
| Pattern makers..... | .45 | 3.60 | Varnishers..... | .32 | 2.60 |
| Automatic machine operators..... | .35 | 2.80 | Painters (specialists)..... | .35 | 2.80 |
| Polishers..... | .37 | 3.00 | Saddlers..... | .35 | 2.80 |
| Tool room hands: | | | Propeller makers..... | .42 | 3.40 |
| Adjusters..... | .44 | 3.50 | | | |
| Turners..... | .45 | 3.60 | Indemnities for high cost of living are allowed on above wages. | | |
| Milling machine operators..... | .44 | 3.50 | For men earning \$2 to \$5 the indemnity is from \$1 to 0 per day. | | |
| Smiths..... | .40 | 3.20 | For women earning \$1.50 to \$3.60 the indemnity is from 60 cents to 0 per day. | | |
| Grinding machine operators..... | .44 | 3.50 | Workers under 18 years of age are entitled to an indemnity of 20 cents a day, the maximum wage from all sources being \$2.70 per day. | | |
| Sheet metal shops: | | | | | |
| Sheet metal workers..... | .35 | 2.80 | | | |
| Tool makers..... | .39 | 3.10 | | | |
| Planers..... | .37 | 3.00 | | | |

Again, a worker may receive 40 cents an hour fixed, plus 10 cents premium, giving a total of 50 cents an hour, or \$4 a day, this being above the minimum, but below the maximum. A thoroughly competent worker might receive 52 cents an hour fixed and 11 cents premium, giving him the total of 63 cents an hour, which is the maximum rate. When the total wage is only \$2 a day the worker is entitled to a \$1 indemnity for high cost of living, giving him a minimum wage of \$3. This indemnity for high cost of living is on a decreasing scale, beginning at \$1 when the daily wage is \$2 and ending at 0 when the daily wage is \$5.

Hours and rates of pay underwent no changes in the French automobile factories during 1914. With the outbreak of war the French military authorities made the mistake of calling up every man as a soldier, whatever his worth as a worker, and however slight his use behind a gun. Under this old-time system Louis Renault, the biggest automobile manufacturer in France, had the value of a sergeant in the artillery; Louis Bleriot, engineer and pioneer aviator, actually served for a certain length of time in the artillery, and Michelat, chief engineer to Delage, handled horses in a supply train for a few months.

France must be given credit for very quickly recognizing that her system was out of date, but this did not enable her to recover the men who had been lost during the first few months of fighting, and it never made it easy to get young, but experienced, engineers or specialists away from the front to the service of the factories. Right up to the end there was a struggle between the old school and the modern on this point. Practically no man under 35 years of age avoided some service at the front.

With the intensive production program of 1915 the men most essential to the automobile factories were released by the army, and at the same time women were taken on for work which, up to then, had been done exclusively by men.

Women in Industry

• Much more has been heard of woman's part in the war in England than in France. The reason is not far to seek. In England there are immense numbers of young women who before the war had no occupation. These girls volunteered for service and the change was of such social importance as to attract an immense amount of attention. In France, the great majority of women of the working and middle classes worked before their marriage and in

Growth of Wages in French Automobile Industry

| | 60 Hrs. per Week | 66 Hrs. per Week | 66 Hrs. per Week | 66 Hrs. per Week | 66 Hrs. per Week | 60 Hrs. per Week | 60 Hrs. per Week | 60 Hrs. per Week | 48 Hrs. per Week |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | 1914 | March, 1916 | July, 1916 | January, 1917 | | May, 1917 | April, 1918 | August, 1918 | June, 1919 |
| Skilled workers: Fitters, turners, etc. | 25c per hr. | 26c per hr. | 30c per hr. | 36c per hr. | | 40c per hr. | 45c per hr. | 50c per hr. | 63c per hr. |
| | | Dec., 1914 | Sept., 1915 | January, 1916 | July, 1916 | February, 1917 | April,* 1917 | April,† 1918 | June, 1919 |
| Unskilled workers.... | 10 to 11c | 12c per hr. | 13c per hr. | 14c per hr. | 16c per hr. | 18c per hr. | 20c per hr. | 22c per hr. | 27c per hr. |

*From this date unskilled workers were given an indemnity of 30 cents per day to cover high cost of living.
†In June, 1918, indemnity increased to 50 cents per day.

many cases after it; thus in their case the war only brought about a change of occupation. Thousands of the mechanics' wives, with their husbands at the front, went to work in the factories. Girls who had been employed in the millinery, dressmaking and fancy trades left these occupations for munition and engineering shops.

In the automobile factories there were very few jobs women did not undertake. Although the majority were kept on the lighter classes of works, they were even found in the forge shops and the foundry. Renault trained groups of women for aviation engine assembly, which they did very satisfactorily. He also had women chauffeurs for driving small automobile trucks from one factory building to the other. Darracq used women very successfully for acetylene welding. Unic used women for chassis testing on the road.

Provisions for Children

The presence of large numbers of married women in the factories brought about important changes. On the request of the Government all the large factories opened nurseries, and in some cases maternity homes, for the benefit of the married women working in their establishments. Citroen erected one of the finest maternity homes, nurseries and infants' schools to be found anywhere in the world. Renault, Panhard, and other big establishments did the same. At the Renault factory, which may be taken as a sample of the others, children were admitted between the ages of 3 and 10. They were brought by their mothers at 6.30 in the morning, before beginning work.

From 7 to 7.30 they were given breakfast, and at 8 o'clock all children above 6 years of age were taken to a public school in the neighborhood and called for at 11 o'clock. At midday a hot meal, brought in the morning by the parents, was served to the children. The afternoon was taken up with school for the elder children, followed by a light meal, then recreation or study until the mothers called for their youngsters at the end of the day. All this was free, and was carried out under the best possible conditions, with the attendance of a doctor and a trained personnel.

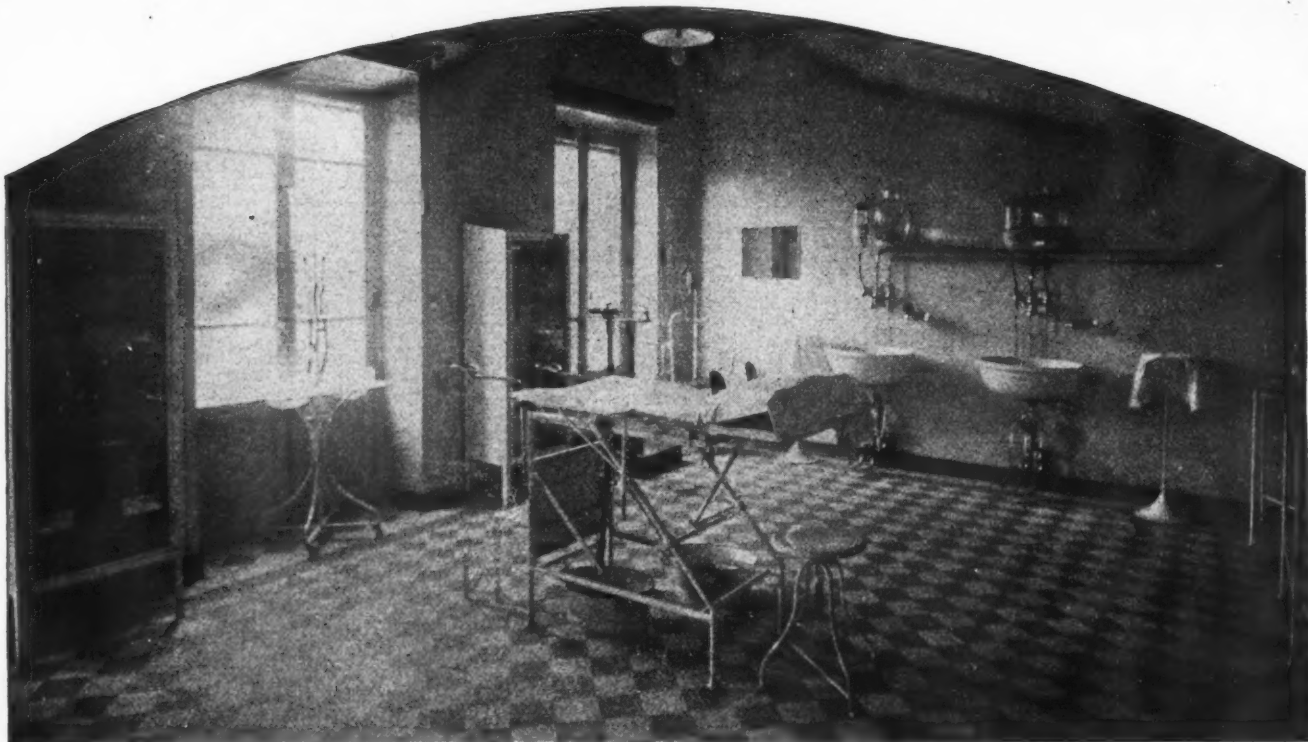
Before the war medical and dental services were very slight. Even the best factories had nothing more than a first aid dispensary for dealing with accidents. All this has changed and such firms as Renault and Citroen have the best surgical and dental services modern science can devise. The records show that at the Renault factory, in 1918, there were 11,770 medical consultations, 80,337 persons had wounds dressed, while in the dental department 5239 teeth were extracted and 4676 persons received other dental treatment.

(To be continued.)

Increase in Wage by Reason of Application of 8-Hour Day

French Factories

| Old Rate | New Rate | Old Rate | New Rate | Old Rate | New Rate | Old Rate | New Rate |
|----------|----------|----------|----------|----------|----------|----------|----------|
| .10c | .12c | .22c | .27c | .33c | .41c | .44c | .55c |
| .12c | .15c | .23c | .29c | .34c | .42c | .45c | .56c |
| .13c | .16c | .24c | .30c | .35c | .44c | .46c | .57c |
| .14c | .17c | .25c | .31c | .36c | .45c | .47c | .59c |
| .15c | .19c | .26c | .32c | .37c | .46c | .48c | .60c |
| .16c | .20c | .27c | .34c | .38c | .47c | .49c | .61c |
| .17c | .21c | .28c | .35c | .39c | .49c | .50c | .63c |
| .18c | .22c | .29c | .36c | .40c | .50c | .52c | .65c |
| .19c | .24c | .30c | .37c | .41c | .51c | .54c | .67c |
| .20c | .25c | .31c | .39c | .42c | .52c | | |
| .21c | .26c | .32c | .40c | .43c | .54c | | |

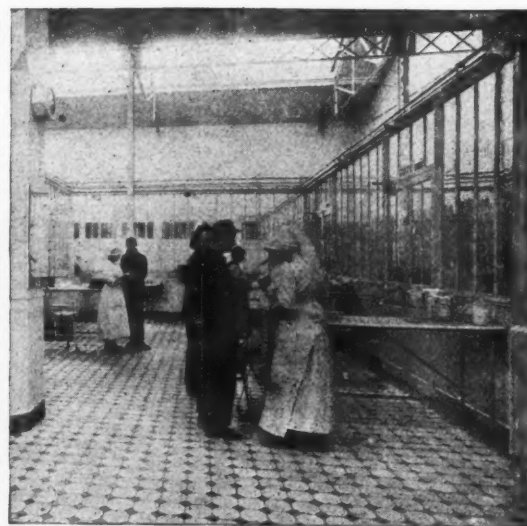
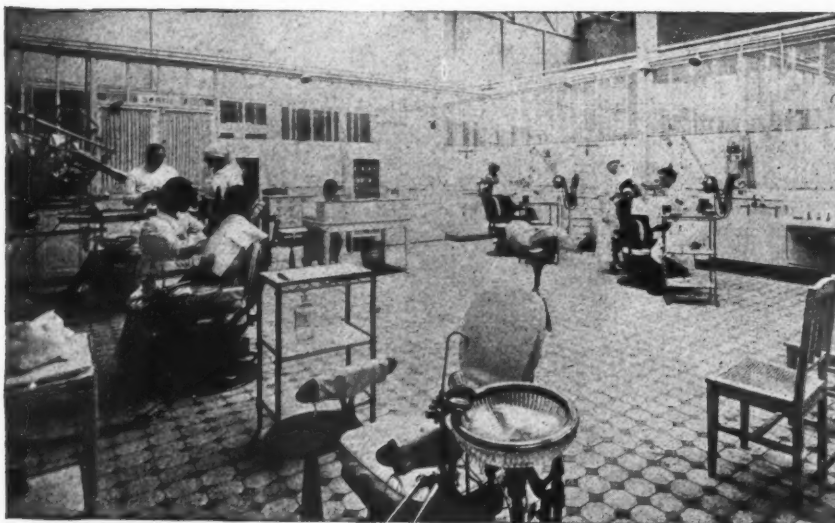
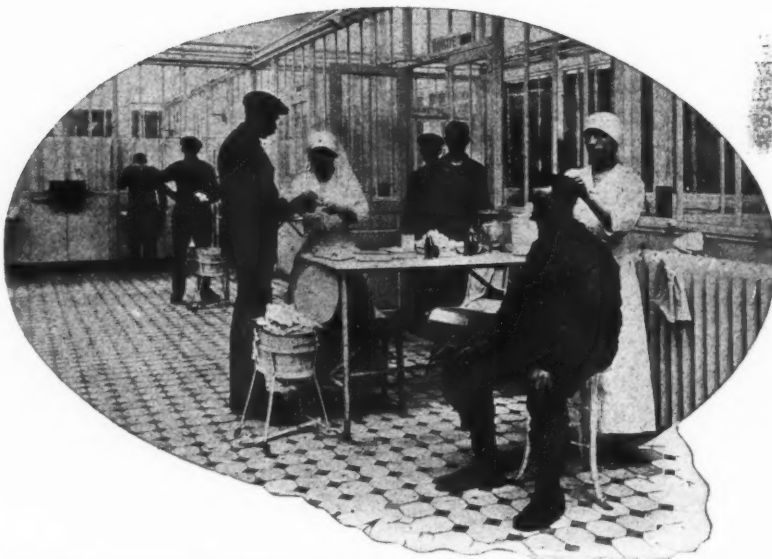


Above—Renault medical department.

To the right—Dressing minor wounds in medical department at Citroen factory.

Below—The free dental surgery at the Citroen factory is one of the best in the world.

Below to the right—This is a portion of the medical department at the Citroen factory.



Recording Propeller Thrustmeter

Of the various problems which have arisen in connection with the development of aviation, one of the most important has been the matter of propeller thrust. Hitherto there has been no accurate means of measuring this and, accordingly, the measuring device described herewith has been designed by the Airplane Engineering Division of the U. S. A. This is another of the McCook Field articles.

UP to the present there has been no accurate means of measuring the thrust of an airplane propeller, except by connecting the airplane to a platform scale in such a way that the horizontal pull of the propeller will be shown on the scale. This method, however, does not give an accurate indication of the static thrust of the propeller, as correction must be made for the total resistance of that part of the machine within the slip stream.

It was felt that an instrument designed to measure accurately and record the propeller thrust under actual flight conditions would prove very valuable, both as a check on design calculations and also as a means of establishing a definite relation between actual flight conditions and wind tunnel tests of propellers and models.

A recording thrust measuring device or propeller thrustmeter, therefore, was designed by the Airplane Engineering Division for use on standard types of airplane engines. This thrustmeter, the construction of which is shown, is arranged to fit the standard Liberty engine shaft, but it could with slight modifications be adapted quite easily to other makes or types of engines. The device is held in place on the propeller shaft by a nut similar to the regular propeller hub retaining nut. This thrustmeter may be applied to any plane equipped with a Liberty engine with very little work, except in some cases where the radiator may interfere.

Roughly, the new thrustmeter consists of a separate driving mechanism and propeller mounting so arranged that the propeller may slide longitudinally to a limited extent on its shaft, while still being turned through a positive connection with the engine. A heavy spring is mounted on the forward end of the shaft in front of the propeller, the latter tending to pull forward on its shaft and thus compress the spring. On the rear face of the propeller is mounted a ring which is in contact at all times with a roller attached to the forward end of a plunger or follower. A spring back of the plunger forces it forward and thus keeps the roller in contact with the ring on the rear of the propeller at all times. The plunger is connected through suitable linkage to a pencil which plays on the revolving drum of the recording mechanism, thus automatically giving a continuous log of the thrust of the propeller in flight.

While this mechanism records the actual propeller thrust

at all times, it does not, of course, make any record of altitude, engine speed, or other conditions which must be known in judging the performance of a propeller. A synchronizing device, therefore, is attached on the recording drum of the thrustmeter, consisting merely of a pencil operated by an electromagnet. The observer notes the altitude, engine speed, etc., periodically and operates the synchronizing mechanism each time such observations are taken, so that a mark is made upon the chart on the recording drum corresponding to each point where readings were taken. By this means the record easily can be compared with the observations made by the observer in the plane.

Detailed Description

The central part of the thrustmeter fits on the engine shaft and is held in place by a sleeve and nut. The sleeve of the propeller hub slides endwise on the barrel section of the driving member and is held in place by a heavy spring, which, as previously explained, goes in front of the propeller itself. This spring is calibrated so that the exact thrust of the propeller in pounds will be recorded directly on the chart on the recording drum.

There are four dogs on the driving member and these fit into the four slots in the driven member, the power being transmitted from the engine to the propeller through these dogs. Each dog is provided with a roller which is free to turn on a pin. By

means of this construction the propeller hub proper is allowed to move back and forth on the barrel with very little friction, even when the full power of the engine is being transmitted.

The propeller hub is fitted with two calibration rings, which are used for fastening spring balances or other devices used in calibrating the thrust spring before the device is put into actual use.

Fig. 1 shows the thrustmeter assembled complete with the spring and retaining nut. The means of locking this retaining nut is also illustrated in this photograph.

The details of the follower or plunger device which runs on the circular track of the driven member are shown in Fig. 2, while the complete plunger or follower assembly is illustrated in Fig. 3. The roller A, Fig. 2, on the forward end of this plunger B is held in contact at all times with the track of the driven member by means of a spring C, Fig. 2. The spring is held in place inside the plunger

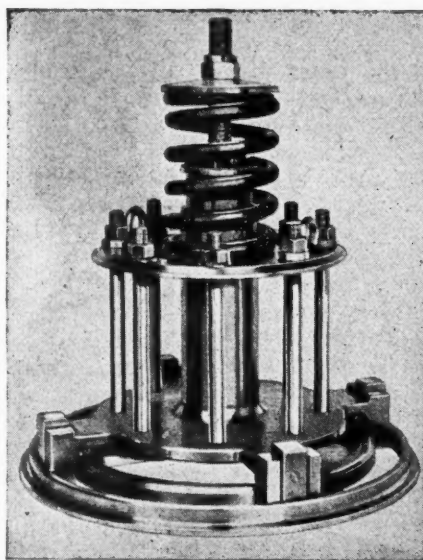


Fig. 1—Complete assembly of thrustmeter

case or tube D by the nut E. The plunger case D is mounted in any suitable location on the fuselage by means of the bracket F.

A fine piece of piano wire is fastened on the rear end of the plunger or follower rod G, Fig. 2, as shown at G and H, Fig. 3. This wire, as shown at C in Fig. 4, is connected to the pencil holder A, Fig. 4, on the recording drum. The pencil is moved upwards on the drum as the propeller thrust increases and the propeller moves forward on the engine shaft, thus allowing the plunger or follower to slide forward in its case. A small return spring on the pencil holder tends to pull the pencil down to the lower edge of the drum as the propeller thrust decreases. The pencil is held in contact with the paper by means of a small spring held in place by a nut, as shown at B in Fig. 4. The revolving drum is set to make one complete turn in 28 min.

The synchronizing device, by means of which the observer in the plane makes a record on the revolving drum of the exact point at which he takes observations of air speed, engine speed, altitude, etc., consists of a second pencil operated by an electromagnet. This is shown at D, Fig. 4. When the operator takes readings from the instruments in the cockpit, he closes the circuit which operates the magnet of the synchronizing device D, and this causes the pencil to make a mark on the revolving drum. The synchronizing pencil is set some distance in advance of the recording pencil to avoid interference between the two, consequently when making computations from the chart of the thrustmeter it is necessary to measure back from each synchronizing mark the exact distance that the synchronizing pencil is in advance of the recording pencil. This has been allowed for in reproducing some sample charts made with this device.

Ground and Flight Tests

A number of ground and flight tests have been made with this thrustmeter with the idea of determining if the device is practical in its present form, rather than for the purpose of obtaining data on different types of propellers. Results of these facts indicate that the device will operate satisfactorily, and can now be used as a standard means of measuring the thrust of different types of propellers under actual flight conditions.

The spring for measuring the amount of thrust was calibrated by compressing it in a testing machine, the length of the spring being read at each increment load of 100 lb. A curve of this calibration shows that each increase of 100 lb. in load compressed the spring $\frac{1}{8}$ in.

In order to hold the propeller steady, the device was assembled on the propeller shaft with the spring compressed $\frac{5}{8}$ in., which corresponds to an initial test of 500 lb. It is evident, therefore, that the propeller thrust must be greater than 500 lb. before any record can be made on the chart.

The first test made of the new device consisted of a ground trial to record the thrust of the propeller at various speeds. It was found that when the propeller was running at a speed below 800 r.p.m. the thrustmeter

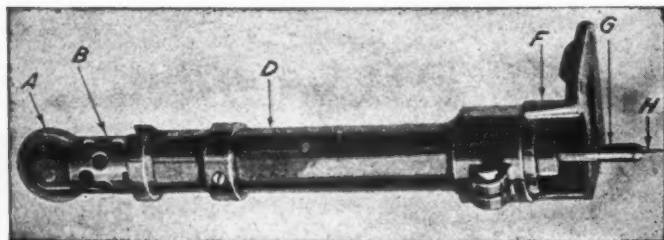


Fig. 3—Roller plunger assembly

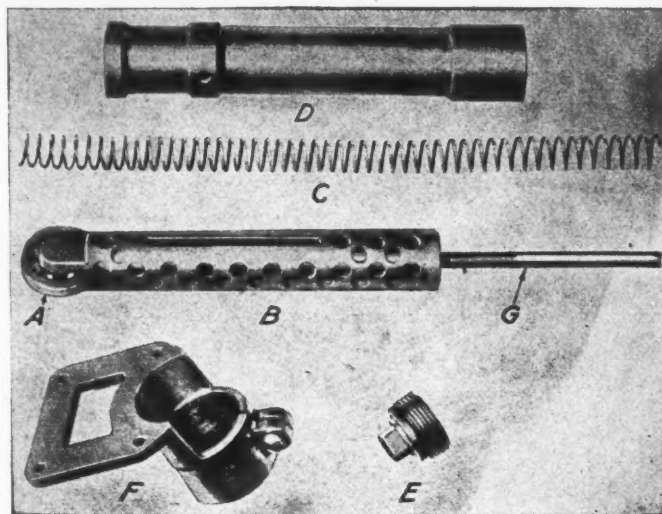


Fig. 2—Details of follower or plunger

made a disagreeable knocking sound at the propeller hub. This disappeared at higher speeds. The knocking was found to be due to the fact that $\frac{1}{16}$ in. clearance had been allowed between the rollers on the ends of the driving dogs and the slots in which these rollers operate. When the propeller speed was higher than 800 r.p.m., the torque increased to an extent that the rollers on the driving dogs were pressed firmly against the driving side of the slots.

A sample propeller thrust chart made with this thrustmeter at the first ground test is reproduced to the right of Fig. 5. The engine speeds at which the different readings were taken are marked directly on the chart. The relation between engine speed and propeller thrust on the ground readily can be seen from this chart, and also from the chart to the left of Fig. 5, which was taken in a later ground test.

Flight Test

The second test of the thrustmeter was made in flight. The plane climbed to 4000 ft., flew level at this altitude for a short time, and then landed. The chart made by the thrustmeter in this flight is reproduced in Fig. 6. An altitude curve has been dotted in on this chart to show the altitude of the plane at the points where the propeller thrust record was made.

It will be noted that the thrust curve in this chart goes below the zero line at one point. As the thrustmeter is so built that there can be no record below 500 lb., it is probable that this apparent inconsistency is due to the paper being placed too high in the drum, or to some other similar cause. The thrust readings on this particular chart should therefore be increased about 100 lb. in every case, as this appears to be approximately the amount the curve extends below the base line.

Inspection After Flight Test

After the flight test the thrustmeter was disassembled and inspected. It was found that there was considerable wear in the sides of the slots in the driven member where the rollers on the dogs of the driving member traveled. Both the driving and driven members were badly scored where the one slides over the other, this evidently being due to some small body getting between them. These parts were redressed, the clearance between the driving and driven members where the latter slides endwise on the former being increased from 0.002 in. to 0.0035 in. This extra clearance permits better lubrication and allows freer play for the parts in sliding over each other.

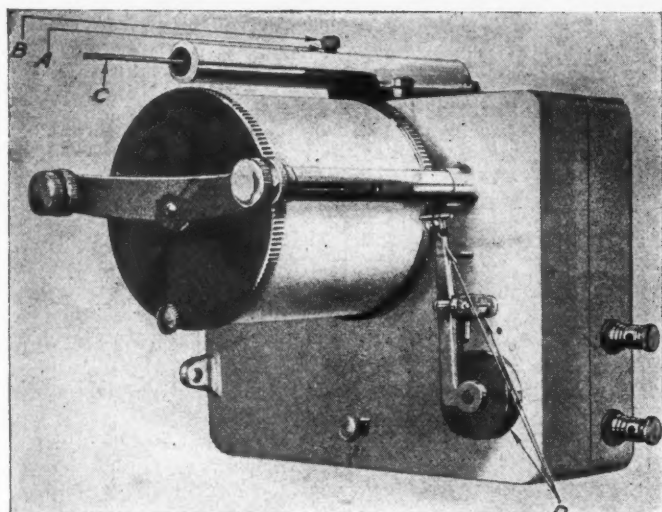
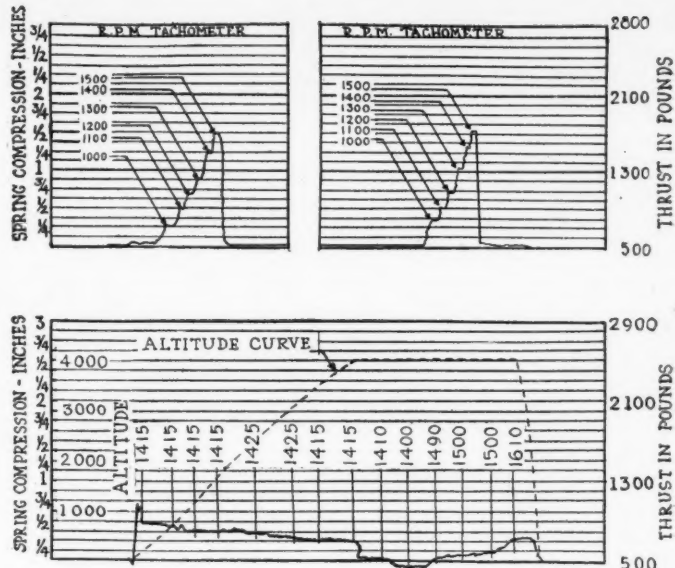


Fig. 4—Recording drum with pencil operated by follower

While this work was being done, larger driving rollers were made to reduce the clearance between them and the sides of the slots in the driven member from 1/16 in. to 0.005 in. After these changes had been made, a second ground test was made of the thrustmeter, and it was found that the knocking which had occurred at the lower speeds during the first ground test was no longer apparent.

The chart made in the second ground test is reproduced at the left in Fig. 5. It will be seen that this chart is very similar to that made in the first test on the ground.

The result of tests made up to the present time with this device indicates that a thrustmeter of this type undoubtedly will prove valuable in propeller work for furnishing a ready means of checking calculations of thrust made in designing propellers, providing a basis of comparison



Leveled off at 4,000 ft.

| R.P.M. | Air Speed | Temp. | Altitude | Time | R.P.M. | Temp. | Air Speed |
|--------|-----------|-------|---|------|--------|-------|-----------|
| 1410 | 83 | 68 | 1000 | 1.40 | 1415 | 83 | 68 |
| 1400 | 85 | 68 | 2000 | 3.20 | 1415 | 80 | 68 |
| 1490 | 90 | 68 | 3000 | 5.40 | 1425 | 75 | 68 |
| 1500 | 93 | 68 | 4000 | 7.45 | 1415 | 68 | 68 |
| 1500 | 95 | 68 | NOTE—Spring given an initial tension of 500 lb. | | | | |
| 1610 | 105 | 68 | | | | | |

Figs. 5 and 6—Above are two typical propeller thrust records made on the ground. Below is a chart of propeller thrust made in flight with a De Haviland-4 plane and Liberty-12 engine

between wind tunnel tests of model propellers and actual flight performance, and lastly enabling the making of concrete comparisons in service between different types of propellers.

Heat Treatment of Duralumin

A SERIES of tests have been made for the National Advisory Committee for Aeronautics to establish further the laws of the effect of varying heat treatment conditions—quenching temperature, time and temperature of ageing, on the physical properties of duralumin, and to determine the best practical conditions for this heat treatment. It may be explained that duralumin is an alloy containing more than 90 per cent aluminum, which has a specific gravity of 2.85 and a melting point of 1200 deg. F. (650 deg. C.). The results justify the following conclusions:

There is not in the case of the duralumin type of alloy, as there is in the case of steel, a definite quenching temperature which marks the limit of the property of the material to harden; duralumin may be hardened by quenching (followed by ageing) from temperatures varying from 250 deg. C. to 520 deg. C., and the hardness obtained by quenching from these temperatures increases uniformly as the quenching temperature increases, reaching a maximum at the latter temperature.

Duralumin, on the other hand, is similar to steel in the fact that the tempering of it or ageing after quenching is determined by two factors: time and temperature. A temperature of 150 deg. C. marks what may be called a critical temperature with respect to the ageing of duralumin; i.e., above that temperature continued ageing may cause a decrease in hardness after the maximum hardness is attained, whereas below that temperature no such subse-

quent decrease of hardness occurs. The lowest temperature at which the maximum hardness may be obtained is approximately 125 deg. C.

The rate of increase of hardness with time upon ageing is roughly proportional to the temperature of ageing.

The period of time of holding the specimen at the quenching temperature before quenching has but an inappreciable effect on the properties obtained; on the other hand, an improvement in the hardness of specimens quenched from temperatures below from 500 deg. C. to 520 deg. C. is obtained by preheating them before quenching to the latter range of temperature. Specimens held for 21 hours at the higher quenching temperatures before quenching (515 deg. C. to 525 deg. C.) were blistered with consequent decrease in hardness.

Heating the material above 520 deg. C. is generally detrimental; the material usually blisters and an oxide layer is formed on the surface.

The following tensile properties have been obtained on rolled sheet of the above composition:

| Tensile Strength Pounds per sq. in. | Proportional Limit Pounds per sq. in. | Elongation in 2 Inches Per cent |
|--|--|------------------------------------|
| 60,000 | 40,000 | 6 |
| 60,000 | 30,000 | 20 |

These properties may be obtained by quenching from 515 deg. C. followed by ageing for one week at from 125 deg. C. to 150 deg. C., depending upon whether a high proportional limit with low ductility is desired (ageing temperature of 150 deg. C.) or the converse.

Some Truth about Legitimate Publicity

We present this paper by a banker about banks without apology and with this brief explanation: Automobile makers have abused their privilege of publicity until their paper is in contempt in most of the publication offices of the country. Because the automobile was new and of public interest, exceptional opportunity was offered to the trade. This has been abused and, in this summary of publicity from a banker's standpoint, we find the reason. It is printed solely for the lesson it carries to the automotive field

By James L. Clark*

IF there is one cardinal principle that can be laid down for publicity, I believe it is this:

Publicity should be built from the viewpoint of the newspapers to which it goes rather than of the corporation from which it comes.

It is also true that a newspaper or any periodical succeeds over a period of years only in direct proportion as the articles it publishes interest its readers. The type of publicity, then, which interests the readers of a newspaper may be classified as your contribution to the success of that newspaper. Publicity for publication in a newspaper and articles prepared by the staff of the newspaper itself should both be founded on the same principle—reader interest.

Actual news values, both as to substance and treatment, must be the determining factors in preparing publicity—not the desire to get favorable advertising without paying for it. Publicity that is not based on public interest is not worth getting; on the other hand, the publicity that really grips the public's attention because it interests them is beyond price.

The publicity man, when he has something to release, should, so to speak, get up from his desk, walk out of the building, shake all atmosphere of his job out of his system and then come back in the attitude of a keen-nosed reporter looking for news. Then he can sit down and write his story with the proper perspective.

This attitude of mind will differentiate the work of the publicity man from the work of the press agent—it will differentiate his product from a free advertisement which disgusts the editor and bores the reader as compared with a real news item in which the name of his institution is an essential part of the news value.

News Value the Test of Publicity

Anything really worth offering to the papers will have an actual news value. If it hasn't it isn't worth offering. The guiding line for legitimate publicity is just that. **The publicity man should ask himself whether at heart the release is news or whether it is advertising.** Advertising is a by-product of publicity, not its aim. Legitimate publicity seeks to inform the public, not to sell them.

If your company is not doing things big enough and important enough to have a legitimate claim on the news interest of the public, the corporation doesn't deserve publicity. It should advertise and pay for it.

It should be borne in mind at this point that we are confining ourselves here to legitimate publicity for banks, bond houses and similar high-grade financial institutions. Illegitimate publicity may be and doubtless is of distinct advantage in certain lines of endeavor where the press agent is still an essential part of the organization, where the main problem is to get the name talked about today, no matter if it is forgotten tomorrow, where there are no particular traditions and where dignity is neither necessary nor desired.

By illegitimate publicity, we mean the type of publicity that is obtained through favoritism or through deception, that is either built on fiction or is pure unadulterated self-advertising.

The word "publicity," as here used, refers only to that type of publicity which is obtained by sending news to various periodicals, in which the name of an institution for which publicity is sought is made an essential part of the news.

The word "publicity" itself in its fuller sense embraces not only this type of publicity but also paid advertising, direct advertising, letter writing, speech-making and every form in which the art of making known may be scientifically applied.

A Publicity Man's Duty

As publicity men for the great financial institutions of the country, our work is not to be classed with that of the press agent. We are quasi-public servants. We have a duty to perform, not only a duty to our employers, but also a duty to our country and our fellow-citizens as well. We have access through our various affiliations to important information not generally available through ordinary channels. When we furnish accurate information to the public in language that can be readily understood, when we subscribe the names of our institutions to sound conclusions based on facts carefully compiled, we are setting up for our public guide-posts to clear thinking,

*Manager Service Department National Bank of Commerce, New York.

and thus we are performing an actual service of no mean importance to this nation and its people.

The benefit to our employers is and rightly ought to be incidental, but for that very reason this benefit is more certain, more lasting, more cumulative and more dignified.

The ideal piece of publicity is one containing matter of such great public interest and importance that no live editor will dare turn it down for fear of being placed in the position of having been beaten. The least a release can do is to contain a news gem of interest to a special field.

As soon as an item ceases to contain this essence of news value, it ceases to be publicity and begins to become advertising and should be paid for at regular space rates. The effort to get it in the news columns free does not constitute legitimate publicity effort.

In the long run, the publicity man who keeps his publicity clean, who himself submits it to as drastic and searching a news judgment as a disinterested editor who sees only his public, will profit by his own rigorousness. It will result both in raising the tone of his output and in improving the receptivity felt toward it on editors' desks.

So much for the substance of publicity material. The handling of it deserves equal consideration. In other words, the story should be written in true and proper news form, so as to require a minimum, if any, rewriting in the newspaper offices. Particular attention, therefore, should be given to the lead. The opening paragraph should contain the maximum of news punch from the point of view of the editor's news judgment and the public's news interest—not the maximum of conspicuousness for the firm name or product or any other self-serving feature in the story that belongs to the province of advertising.

Four Natural Types of Publicity

To be more specific, I believe that legitimate publicity concerning a financial institution may be classed into the four following divisions:

(1) It is legitimate publicity to offer to the papers news strictly of interest to the banking and financial community—such as the appointment of a new officer. It verges on the illegitimate to attempt to embellish such a personal item beyond its intrinsic value. In this category also falls an announcement of an increase in surplus or capital, or other items of a similar nature. Basically, items of this sort are news of value and interest to the specific financial community.

(2) Articles and speeches by officers or members of the firm regarding technical aspects of their work valuable to other practical workers in finance and banking also constitute a legitimate source of publicity.

(3) Legitimate publicity for a financial institution may consist of material of interest to specific businesses or trades, such as statistical studies on textiles, metal or other commodities, particular trade conditions, etc. **This is legitimate news as long as it is informative and accurate. It is not legitimate publicity if it is merely a careless array of figures sensationally treated only to serve as a vehicle for riding the name of an institution into public notice. Such items are boomerangs with infinite possibilities for harm. Material of this sort, to have the requisite germ of news value, should deal with a phase of the subject of current interest and importance**

to the particular reader for whom it is intended. For instance, there would be no justification for putting out a statistical article on the cultivation of cotton in ancient Egypt; but there is justification in putting out an article on the cultivation of cotton in Egypt of today in relation to its possible effect on the American foreign cotton market, provided you have some new and reliable information on the subject.

(4) Legitimate publicity material may be produced that has general news value by virtue of dealing with the general business situation or with an economic study of conditions affecting the general run of people, as distinguished from a technical, financial discussion of interest only to those engaged in the practical work of finance, banking or trade.

The style of publicity discussed in the first category—that is, appointment of officers, changes in financial arrangements, etc.—arises naturally out of the daily working of a corporation and requires no special equipment. The material discussed in the second category—naturally emanates from the officers themselves; and does not necessarily require special equipment.

Constructive Publicity

Back of the statistical studies and the economic discussions mentioned under the third and fourth categories, there should be a substantial expert producing staff if the material is to be worthy of public consideration. This type of publicity requires the greatest effort to produce but, when it is basically sound, rightly handled and intelligently placed, its influence for good is widespread and it is worth the cost.

This requirement was met in the National Bank of Commerce in New York by the organization of a "Service Department" which includes subdivisions devoted to the study of the various aspects of foreign trade; to statistics as applied particularly to commodities; to economics as applied particularly to money, banking, credit and allied subjects; and to legislation affecting business men, banks and corporations. A carefully selected business and financial library and a trained corps of investigators and general workers round out the department.

I do not believe it would be legitimate publicity effort to offer to the field of journalism material of this sort that did not arise from such a thoroughly equipped organization. It would not be fair to place periodicals in the light of publishing half-baked or unsound material.

They should be able to feel that when statistical material with our name attached to it comes to them, they can accept it with faith as to the facts and with confidence as to the point of view. They should at least be able to feel absolutely that they are not liable to mislead or misinform their public.

Perhaps I am conveying the impression that the sole purpose of this Service Department is to obtain publicity for the National Bank of Commerce in New York. Publicity is merely a by-product of the department, an important by-product it is true, but nevertheless a by-product, and rightly so. I do not believe it would be good business for any institution to equip and maintain such a department for publicity purposes only.

As its name implies, the chief function of the Service Department is to be of service to the bank and to its friends. The facts of business which it gathers are primarily for the guidance of the bank's officers and as a service for the bank's customers and friends. While

these facts are serving their primary usefulness in this direction, they are put into shape for dissemination as news by the publicity branch of the department. This branch operates independently of the advertising division.

Relation of Free Publicity to Advertising

"Free publicity," so-called, should be founded on a bed-rock of paid advertising, but the hand that signs the advertising contracts should not follow the hand that deals out the news.

Advertise, yes, but do it fearlessly and independently. I have enough faith in American journalism to believe firmly that our worth-while periodicals print news because it is news and advertising because it is paid for. In so doing, they give true service to both advertiser and reader.

Don't be lured by the publisher who offers to print liberal "write-up" of your institution if you advertise with him. Do not allow yourself to be influenced by the publisher who intimates even so vaguely that, if an advertisement is not forthcoming, he is in a position to print things which you would not care to have printed. Do not hesitate to tell these publishers that when your publicity does not stand the acid test as news you would rather they did not print it.

The advertising appropriation should be liberal. It should be expended judiciously and scientifically. We should receive in return advertising space, so many lines for so many dollars, with nothing else thrown in. There is no such thing as something for nothing. If I subscribe to a magazine and the publisher "throws in" with the subscription a handsomely bound volume on bee culture, I have paid for the book whether I want it or not. It is the same with so-called "free write-ups" that are sometimes "thrown in" with advertising. We pay for them. It is usually rather an expensive way to buy advertising.

One is likely to be misled by the phrase "free publicity." Free publicity is not free in the sense that it does

not cost money. It is simply free in the sense that you do not pay space rates for having it published in the newspapers or magazines.

It has been my own experience that the overhead charge on an item of free publicity usually runs higher than the overhead charge on an advertisement, even though art work, plates and electrotypes are included in the overhead for the latter.

Just as this so-called free publicity should be founded on paid advertising, so too it should go hand in hand with direct advertising and personal letters. The direct advertising may be in the form of a house organ or it may be in the form of books, pamphlets, folders, souvenirs, etc. Some or all of these forms should be used, if maximum publicity efficiency is to be desired.

In conclusion, let me bring out again that legitimate publicity is news from the point of view of the newspaper and the public. Illegitimate publicity, although it may be obtained in certain quarters for the asking, ordinarily contains no element of desirability for a high-grade financial institution.

The safe guide in publicity is to let the editor be your judge and don't try to pervert his judgment.

Publicity in its broad sense is the art of making known. It is truly the misfortune of those of us who spend our lives developing the art, that, knocking off a few millions for babes still in arms, there are probably one hundred and ten million folks in the United States today, each one of whom, upon questioning, would feel impelled to admit that he knew quite a bit about this publicity game.

A game, they call it. Perhaps it is. Certainly it is an expensive game to play unless it is played with vision, with imagination, with a caution born of real knowledge of the art of making known. Publicity, if followed scientifically, courageously, tenaciously, is no game of chance. **Publicity is the application of a science, and the results of legitimate publicity will be manifest in the progress of our own institutions and in the healthy business development of America.**

Air Route to Australia

AIRPLANES essaying to win the prizes offered for flight from England to Australia must be capable of sustained flight of at least 2,000 miles. That essential was reported in a recent communication of the British Air Ministry, announcing the findings of officers of the Australian Flying Corps who had investigated routes between Calcutta and Port Darwin that must be taken by fliers competing the \$50,000 prize money offered last spring by the Australian Government for such a flight.

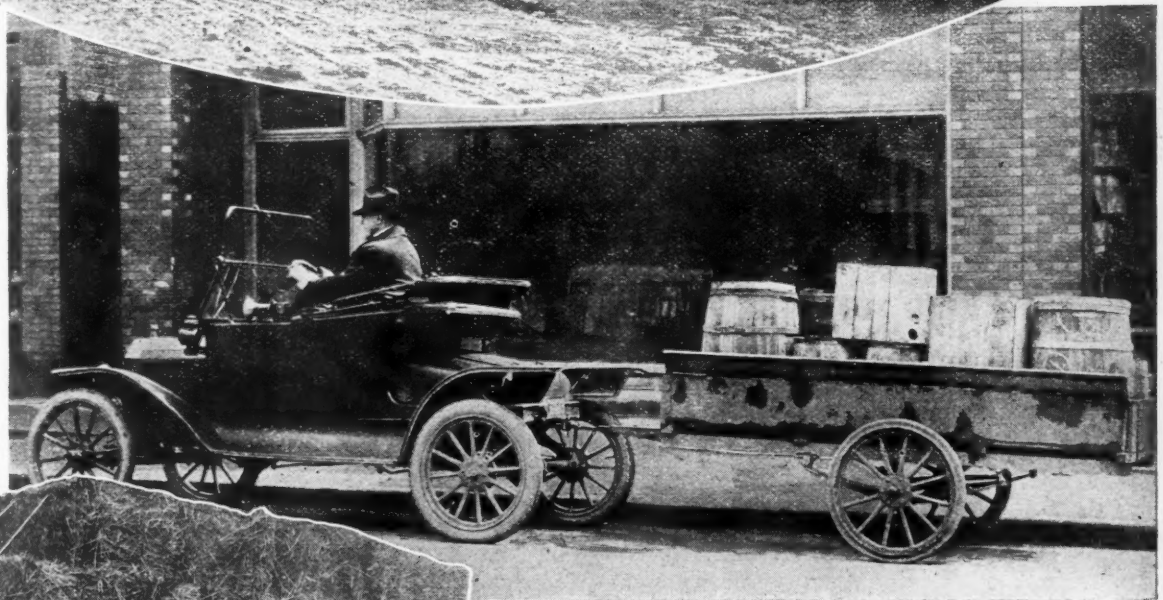
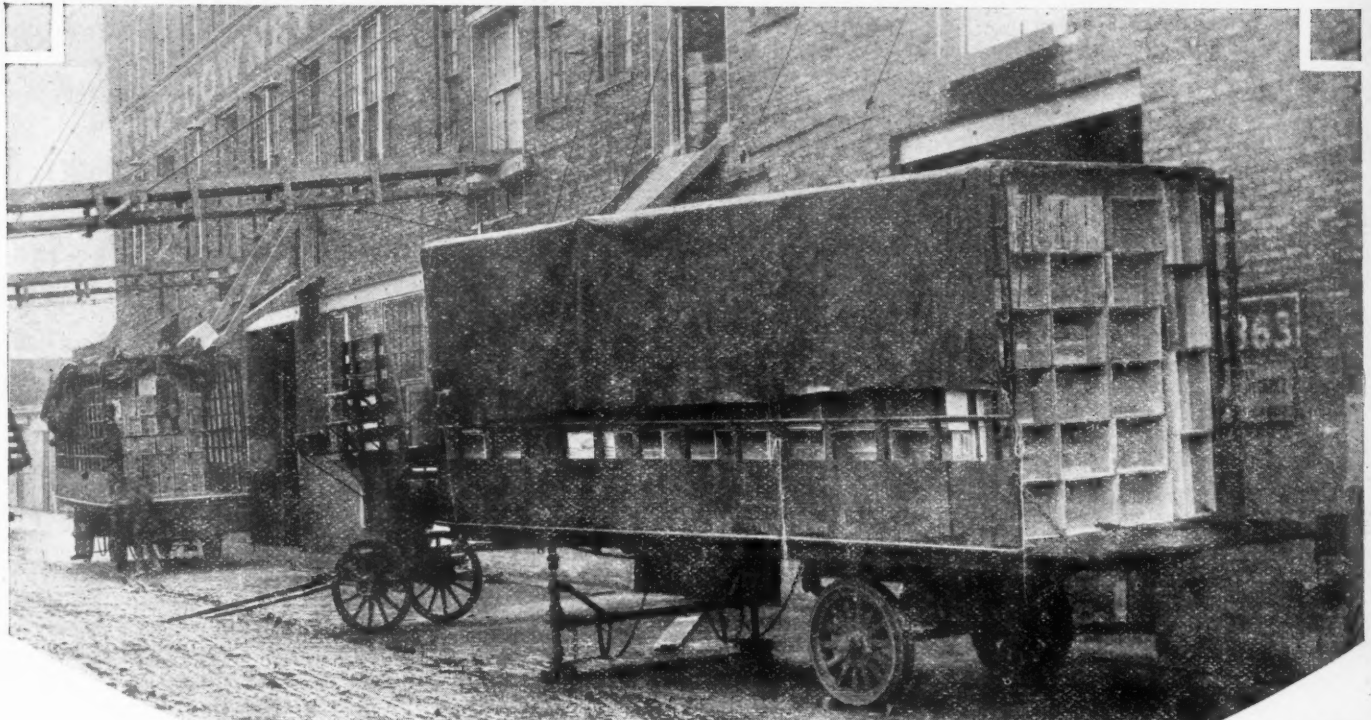
The investigations were made by Brig. Gen. A. E. Borton and Capt. Ross Smith, who returned to London after the completion of their work. Part of the Air Ministry report follows:

These two officers reported that beyond Calcutta the route lies over country far from favorable for aeroplane flying. Between Calcutta and the Dutch East Indies the only landing grounds suitable for immediate use are the race-courses at Rangoon, and at Singapore. Beyond Singapore, where the route lies over the Dutch Islands, the next

place where good landing facilities exist is Bandoong, and thence no landing ground is at present available for the intervening 1,760 miles to Port Darwin. As the weather after the end of November is most unfavorable, General Borton expressed the view that if the flight is to be made this year only aeroplanes possessing a range of at least 2,000 miles could make the attempt with any hope of success.

With regard to the portion of the route between London and Delhi, the same difficulties do not present themselves, as the organization created by the Air Ministry for service flights is meantime available. Owing to the weather after the beginning of November, however, it may be necessary for competitors to fly via Malta and the North Coast of Africa to Cairo. From Cairo to India the difficulties to be faced are greater and vast stretches of uncivilized country have to be traversed. Although more than one flight has been made over this portion of the route, it cannot be said to be in regular operation.

How Trailers Help Carry Unwieldy Loads



Are You Creating Centers of Quiet Unrest?

There is a novel point in this article, and one that will be new to most employers, in the suggestion that the employers are storing up trouble for themselves in their neglect of the professional men and women and the office workers in their employ. Some day, not far distant, many of these office workers will become a considerable force, and Mr. Tipper puts the question squarely as to what trend of reasoning you can expect from this man who knows that he was neglected when his only offense was that he did not organize for strikes or other forms of violence.

By Harry Tipper

A MANUFACTURER of automotive apparatus who was in the office the other day, in talking over the labor situation, made the point that at the present time the returns from capital are sufficiently good to keep capital fairly well satisfied and the wages of skilled and unskilled labor have grown sufficiently; that while the workers are vociferously proclaiming their dissatisfaction they are not displeased; that is, the rank and file of labor are not displeased with the result. But between these layers of society there is a large section which represents all classes of salaried labor, including hundreds of thousands of professional or semi-professional men, all office workers and others of that type, who have been obliged to see the returns to capital maintained upon a reasonably high plane and the returns to skilled and unskilled labor progress very rapidly without any concomitant result in their cases.

Not only is this the case, but these professional, semi-professional and other salaried workers scattered through the whole of industry, from the clerks in the retail stores to the offices, factories, bureaus, in the engineering departments, chemical laboratories, testing departments, etc., represent a great bulk of the orderly, conservative opinion among the workers.

These classes have not organized, they have not demanded consideration by strikes; they have a larger measure of loyalty and allegiance to the individual concern than the skilled and unskilled workers have ever displayed, and they have, as a rule, sufficient intelligence to know to some extent the necessity for profitable returns upon capital.

This manufacturer added that he personally interviewed a certain proportion of the office workers in the various departments, the salaried workers in other departments and some of the executive heads, and he was surprised at the amount of quiet unrest which prevailed in these departments.

From time to time in these articles we have called attention to the weakness in the systems provided by some of the largest concerns in this country in their attempts at reorganization, in leaving out of consideration the salaried worker, and, in fact, in some cases specifically exempting the salaried worker from the operations of the plan.

It is particularly unfortunate in these times, when there is almost an epidemic of demand for a change in the construction of industrial organization, that no attempt has

been made to gather those orderly and conservative persons of the more intelligent workers together in a greater measure of allegiance and a greater understanding for the necessities of the organization to which they belong.

This neglect of the salaried worker and the possibilities of securing his influence so that organization developments may continue to be orderly and not exhibit in increased volume the present tendency to violent and radical action is a sad disappointment to any student of the subject who examines the general developments which have taken place in the last two years. For the most part, these salaried workers have secured a much larger measure of general education than the others before engaging in their occupations. An enormous body of them have gone through specialized courses in engineering, in chemistry and in other sciences which demand a considerable measure of studious application and considerable mental development.

It is not to be expected, therefore, that they view the condition of affairs at the present time without thought, and it is to be expected that their thinking would be a little more searching and a little more insistent than the thinking which has been done by the less intelligent workers.

Their present position is the greatest justification for labor unions which will be found in the industrial fabric. The only reason why the salaried worker has not received the attention which has been given the skilled and unskilled laborer is because they have not organized and used their power of organization to force the situation. The continued neglect of their position, however, and their value to industry not only as workers, but as part of the conservative thought of the middle classes, is creating a sympathy with the suggested advantages of and stimulating a growth in radical and socialistic ideas among this portion of the population which is perhaps more to be deprecated and more significant in its consequences than the growth of similar opinions among the labor ranks.

The plan of industrial reorganization which was finally adopted by one of the largest companies in this country, creating legislative machinery within the organization that will permit the full and free discussion of grievances, specifically stated that no salaried worker was entitled to vote or to representation in this plan.

Such a provision creates the strange analogy by which a man who has been hired to work at a machine six months previous to the date of election, who has not displayed any particular allegiance to the organization or any particular knowledge of the necessities of it, is entitled to representation in the discussion of his grievances, his working conditions and his wages, while the record clerk in the same department of the factory, who has kept those records for ten years and served the company faithfully through its various strikes and other industrial difficulties, who has not broken up agreements and demanded new deals whenever he felt like it and who has otherwise been an efficient servant, is not allowed even a voice in the proceedings and not recognized in any other way in the plans.

This, of course, is not true of the plans which have been based upon the constitutional system and on older plans, such as the Procter & Gamble plans, which have been in existence a great many years and have made no distinction between employees of any type. It is not the case of the profit-sharing plan of the Louisville Paint & Varnish Co., but it is the case in the general industrial plan and in the general office organization in most establishments in this country, and it is one of the weaknesses in the situation the continuance of which it is difficult to understand.

Of course, the reason for this lies in the fact that, with the exception of one or two individual cases in various lines of industry, the various profit-sharing councils, shop committees and other plans have been created, not because of a complete examination of the matter or because of the desire to meet all the fundamental necessities, but simply because the imminence of the problem has obliged the manufacturer for his own protection to take measures to meet the most important difficulty.

The very lack of any articulate and visible problem in connection with the salaried worker has led to his being overlooked in the general consideration. No element in the present situation could be so powerful a criticism upon the general viewpoint of the management and the financial heads of the manufacturing concerns as this matter.

It is not surprising to find school teachers organizing in unions, to find actors going on strike, to find an authors' association affiliated with the American Federation of Labor, and it would not be astonishing to see this tendency to unionize spread into other ranks of individual workers, particularly the professional ranks in industry, unless the manufacturer devices ways and means by which a due measure of recognition can be given to this more independent and more orderly portion of his working force.

The lesson of the power of organized labor in forcing recognition is somewhat too evident to be neglected, and the corollary to that lesson in the powerlessness of the individual to secure that recognition is somewhat too keenly felt by the salaried worker, whose position has not advanced in accordance with that of the skilled worker, to permit it to be passed by in his study of the matter.

It only needs a little actual conversation with professional and salaried workers who are owners of property who, to the extent that they have savings invested, are capitalists, and who have a considerable stake in the orderly development of industrial operations, to find how much unrest there is in their minds as to the present system of industrial organization, how much the validity and justice of the situation is being questioned with them and with what sympathy they are listening to the political creeds of the socialists and others who at least promise a better era, although there is no evidence that they could perform.

Very few of the discussions in the public press have paid any attention to this part of the matter. One or two publications have suggested it and one or two newspapers have taken it up. In some of the technical societies the question of management and its place in the industrial fabric has been discussed; but, for the most part, to any one who studied the public prints and knew nothing about the circumstances, the conclusion would be that capital and labor, the investment of money and the skilled and unskilled help were the whole industrial organization and the whole problem before industry.

My interest in educational activities has led me to do some work in the New York University regularly for a number of years. I have noted hundreds of young men who spent their evenings after their day's work is done, four or five evenings a week for three years or more, to secure a chartered accountant's degree or to be admitted to the bar, or to develop some other line of business which will eventually land them in an office.

The man who will labor for three or four years and forego his pleasure, five nights out of seven, for the purpose of educating himself and will pay for that education out of the money he earns during the ordinary working hours is the man who should be more valuable to industry than the man who leaves school in the eighth grade, passes his short apprenticeship, is trained for a few weeks and operates a machine.

Having in mind what these boys, with chartered accountants' degrees, are going to run into when they have gone through all this educational labor, I have often wondered what their opinion would be of the justice of the rewards in industry when they had been in their chosen occupation for five years.

No amount of sophistry about supply and demand or about labor as a commodity will satisfy this man or the engineer who has taken his four years' engineering course and finds himself after five years of industrial experience getting less than the day laborer who is working under him in the shop.

These elements of weakness in the present system of wage consideration in industry are more important in their final effect on the industrial fabric than most of the present agitation by the skilled and unskilled worker. A large part of the force of the radical program comes from the keenness which the intellectual student has put behind it and not a little of its sympathetic growth is due to the unrest of the more intelligent brain worker who has been neglected because of his loyalty.

In a country of this kind the skilled and unskilled laborers will not have a majority of the population, at least during any period that it is necessary for us to consider. Those who have a stake in the country, those hundreds of thousands of workers who are orderly citizens of their communities, who have an interest in the betterment of education, in the beauty of civic surroundings, in the more orderly performance of civic government, plus the farmer, represent the balance of power in this country, and industry should take pains and trouble, should investigate and understand this important part of the management and the salaried force, who are the backbone of order in the industrial centers and who should be aligned with industry in the development of organization.

The point is being emphasized because of the tendency to overlook its importance and because of the apparent lack of understanding on the part of the manufacturer as to the quiet unrest which is permeating the ranks of the salaried workers. This unrest does not find expression readily, but for that reason it is more fundamental and more important in its final development.

The FORUM

Gas and Steam Horse Powers

Editor Automotive Industries:

WILL you kindly explain to me the difference in value of 1 gasoline engine horsepower and 1 steam engine horsepower. I am aware that steam engine horsepower is

calculated by the general formula: $\frac{\text{Plan}}{33000 \text{ D}^2 \text{ N}}$ and that the

S. A. E. formula for gas engine is: $\frac{\text{Plan}}{2.5}$. But what I

mean is this: Supposing it takes a steam engine of 15 h.p. to operate a certain machine, then it would take a four cylinder gasoline engine of about 25 h.p. to operate the same machine. What is the actual difference in value of the two horsepowers? Why is not 1 h.p. of the gas engine equivalent to 1 h.p. of the steam engine?

Answer: The formula $\frac{\text{Plan}}{33000} = \text{h.p.}$ can be applied to gas engines as well as to steam engines, but in the case of a four cycle gas engine N must be taken as the number of power strokes per minute, which is only one-fourth the number of total strokes. The S. A. E. formula is based on the assumption that the indicated mean effective pressure is 90 lb. p. sq. in. and the mechanical efficiency is 75 per cent, giving a brake mean effective pressure of 67.5 lb. p. square in.

If it takes a 25 h.p. gasoline engine to do the work which a 15 h.p. steam engine will satisfactorily do, it is due to the fact that a steam engine can momentarily deliver much greater output than it can deliver continually, while the gas engine cannot. The gas engines' limit in output is generally its rated horsepower, whereas a steam engine can without difficulty deliver three times its power for a short period. Looking at it in another way, the steam engine can deliver greatly in excess of its rated output if economy is neglected, and we can usually afford to neglect economy for short periods. To get the increased power from the steam engine the inlet is kept open for the greater part of the inlet stroke, so that the pressure in the engine cylinder is equal to boiler pressure nearly to the end of the stroke. At the end of the stroke, when the exhaust begins, the pressure is only a little below boiler pressure and as the whole cylinder is filled with steam at this pressure a great deal of energy is thrown away. By cutting off earlier, much higher economy can be effected, and it is for this reason that steam engines are rated at a much lower output than they are capable of giving.

"Testing of Materials"

Editor Automotive Industries:

I AM in receipt of your letter in regard to Dr. Rosenhain's article in your number of Sept. 11.

I have read this article with considerable interest, but when I got through I found myself exactly where I was when I started.

The author very frankly states that he is putting down nothing but what is in the minds of good engineers all the

time. The difficulty which we are all confronted with is just how to balance certain physical properties of steels against other physical properties to get their relative importance for a given class of service.

All designers have their own ideas in regard to this relative importance, and as the automotive industry has advanced, it is safe to assume that today the opinion of the leading designers is based largely on their own experience covering a wide field, and the chances are that their conclusions are pretty fairly sound.

If some bright individual could get up a formula showing relative merits and values, and get the principal automobile companies to co-operate in the furnishing of data, something tangible might be done.

It would seem as if this were a function of the American Society of Testing Materials and that, if the matter were properly put up to them, something of value might result.

Perhaps your periodical could do a great deal of good if you took this matter up with the above society to see whether they would be willing to initiate some sort of concerted action.—H. W. ALDEN, Vice-President, Timken-Detroit Axle Co., Detroit.

The Death of Professor Langley

Editor Automotive Industries:

OUR attention has been very courteously called to a misstatement in our half page advertisement in your publication of June 12.

In this ad we stated that "Professor Langley lost his life through the slipping of the stays of his plane."

Paul J. Palmer of the Lake Aero Corporation kindly takes the trouble to write us that:

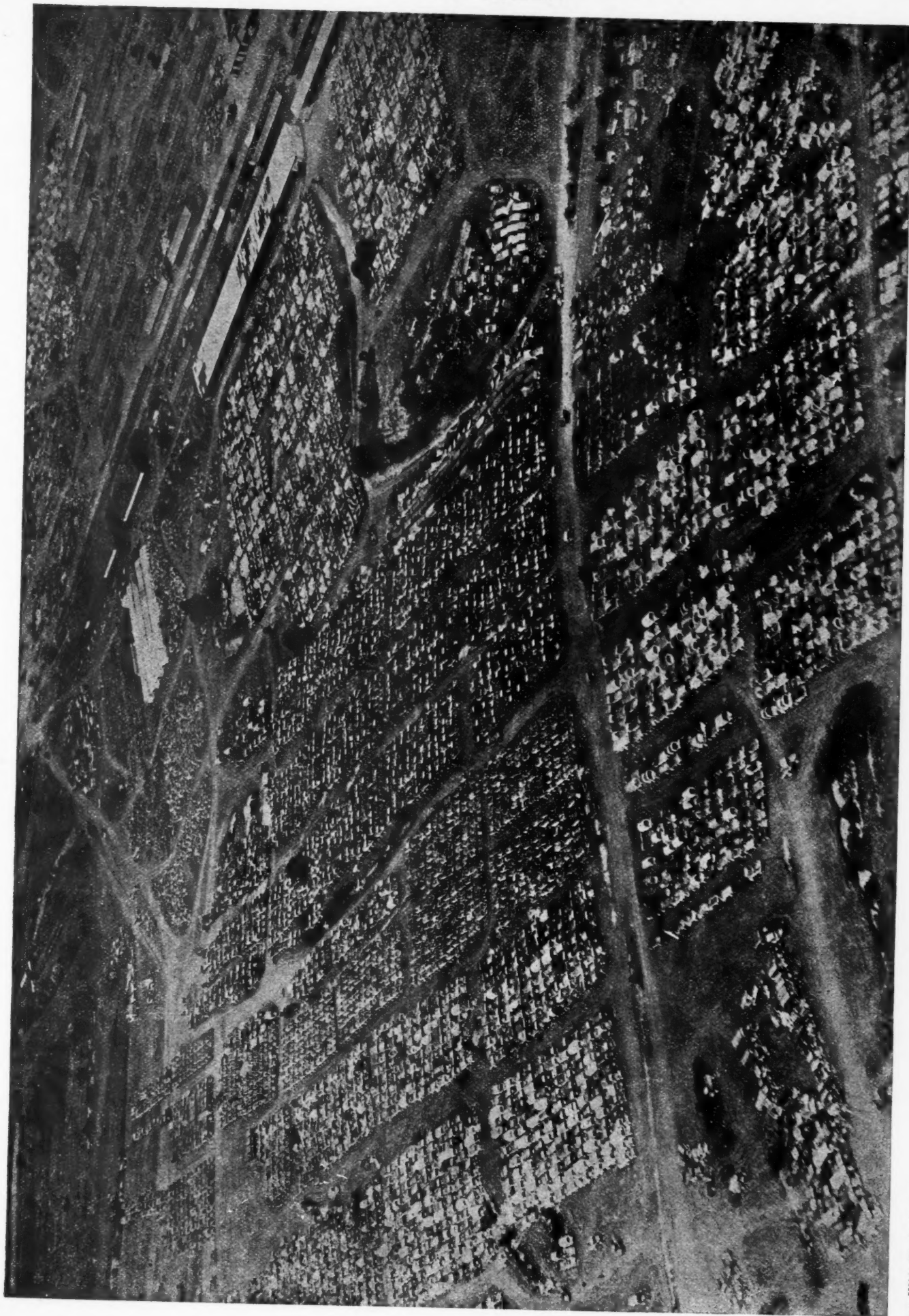
"Professor Langley died from what is termed a broken heart through ridicule after the failure of his man carrying machine on the Potomac River by a fault in his launching device. He was not in the machine at the time, nor was any one hurt. Charles M. Manly, president of the Society of Automotive Engineers, will testify to this.

"However, the man you probably wished to refer to is Professor Montgomery, of California, who lost his life several years ago in a glider, the cause being attributed to slipping stay wires."

We would greatly appreciate it if you would kindly publish our acknowledgment of the above error. Thanking you, we are—L. B. Allen Co., Inc., Chicago.

Power

A BRITISH investigator entered Germany as soon as possible after the armistice to report to manufacturers on the prospects of competition. He reported many things, but one in particular. This was, in effect, that owing to the development of central power stations in Germany, both water and fuel, that the United Kingdom could not hope to meet Germany in manufacturing competition, other conditions being equal, as long as the coal was hauled around the country to supply power locally.



From Wide World Photos

Acres of American motor cars, numbering many thousands, brought together at Le Mans, France, sold by the United States to the French Government. A panoramic view taken from an American army airplane

AUTOMOTIVE INDUSTRIES

THE AUTOMOBILE

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THE automotive industry has been pledged to the support of the Townsend Bill, pending in Congress, which calls for a Federal Highway Commission and a National Highway System. A pertinent question might be: How well do you know the particulars of this bill and how much have you done to promote it with your senators and representatives?

France's Aircraft Plans

SPECIAL attention is called to the article in this issue describing the plans France is making for the promotion of aircraft and for encouragement of the aircraft industry. We are apt to think of France as being too busy overcoming present difficulties to look to the future. But we must revise this thought. France, evidently, is hoping to overcome present difficulties by building for the future.

The possibilities of aircraft for commercial exploitation, for quick communications and for national defense appeal strongly to the French statesmen. Perhaps this is because the men of that country actually visualized the importance of aircraft in the war. Perhaps it is because they are men who can vision the future.

Whatever the reason, it must be admitted that France

is looking more to the future than our own legislators. While the plan for work is well thought out there, in the country no steps have as yet been taken.

Are we going to permit France, war stricken and debt laden, to put an investment in the future that our country feels it cannot afford to make?

The 1920 Truck Show

IN deciding to hold the 1920 truck show for New York in the Eighth Coast Artillery Armory at 194th Street and Jerome Avenue, The Bronx, the truck manufacturers have put this show on a different basis from that of any previous year. All previous shows have been more or less intimately connected with the passenger car shows and have depended upon either the passenger car show for prestige of the central location of the exhibit building to aid in drawing a part of a crowd. The rest of the crowd, of course, came from those who were interested in trucks.

But in taking this show so far uptown, it has forced it to stand on its own merits. It cannot be supposed that merely curious people will go to The Bronx to see such a showing. It is only those who are interested in trucks or transportation who will go and they must be drawn there in spite of themselves. It will be a test of the truck show as a truck show and not as merely a curious exhibit to attract people whoever they may be.

In order to make a success of the exhibition, there must be much consistent work and much intelligent exploitation of the truck and motor transportation. Many promises must be made as to what will be seen there besides a mere truck chassis, and then these promises must be fully kept, so that the first-nighters will go away telling what they have seen and liked.

One fortunate thing about the Eighth Coast Artillery Armory is that it affords ample space. Never before have trucks been displayed where there will be space for transportation display, for a show of not mere accessories, but the big things that go to make the truck worth while—such as loading devices, platforms, architectural devices in buildings to aid transportation, and for an adequate display of special bodies, trailers and even road-building and other things so closely connected with the commercial car market.

It is said that at the meeting at which this location was decided, there was a decided feeling among the truck manufacturers to cast the die with this truck show. In other words, they are still regarding the truck show as an experiment and this particular experiment is to be made the real test. It is probable that if the experiment fails, there will be no more national truck shows. The feeling among salesmen is for parades and outdoor demonstrations. The advertising men of the truck manufacturers are going to take this matter up in earnest in an attempt to devise means whereby the coming exhibition will be a success.

It means much hard word, it means that much ingenuity must be displayed, and it means that the program must be intelligent, entertaining and constructive.

Emergency Truck Fleets

FOLLOWING the drastic transportation lesson of the war, England has just had another experience which probably will be of more direct value than that connected with the movement of the armies.

Dispatches tell that the great truck organization formed

under government leadership has proven itself of so much value that it will be maintained. The idea for its use appears to be that squads of trucks will be dispatched to certain points when need is manifested. For instance, certain overseas docks in England now are congested, shipping is being delayed and merchandise sorely needed for manufacturing rests there while machines stand idle.

The idea as outlined is that a squad of these trucks—lorries the English persist in calling them—will be rushed to the docks and clear up the congestion there. Then they will be sent to any railway station that happens to be congested and so it will go.

This puts the truck into rather a new light and a very favorable one. There can be no doubt that the truck will be extremely useful in such a mission. The great army trucks, driven by soldiers who do not know the meaning of overloads and bad roads, could do an immense work in lifting hurriedly a freight congestion. Usually a congestion is caused by a few extra tons of freight. A few extra tons means slightly more freight than the regular force can handle when put on maximum speed. The minute freight begins to get in the way, the speed of handling is slowed up by a percentage that is entirely out of proportion to the amount of freight that caused it. Often the removal of two or three carloads of freight from a congested center would put the entire freight organization on a smooth running, efficient basis. This help, given at the right period, would evade a congestion that otherwise might inconvenience an entire community for weeks. As a rule, the present day freight handling organization is working at near maximum speed, and it can easily be tripped.

There should be a suggestion to our own railroad administration in this English plan.

Support the Budget Plan

THE promoters of the plan to introduce the budget system in national business claim that they do not get the support of business men in this work. This seems rather strange, as almost any business man would be expected to support a plan which would put the affairs of the nation on a reasonable basis. The objection is not that business men are not interested or that they oppose the plan but that they simply do nothing to promote it. The promoters say that the business men read of it and some of them may talk of it but they do not take up the question with their representatives and senators.

There is no mystery at all about the plan. It is one that should be enforced in all business houses. A recent statement by the National Chamber of Commerce offers this explanation of the system:

"That annually, as soon after the close of the fiscal year as possible, the President shall cause the heads of all departments to submit to him comparative statements showing in detail their expenditures for the fiscal year just closed, appropriations for the year in progress, estimates for the expenditures for the needs of the year to ensue, and such other information as he may require."

Upon this statement, the President will cause the Treasury Department and such departments as are interested chiefly in the income of the government, to go over these statements and revise them where necessary and to make

the amounts allowed to each of these departments coordinate with each other and also with the income of the government. Manufacturers who are showing an intense interest in the entire practice and who are prone to complain of the expenses of the government, should get behind this plan and see that it goes through as it will, of course, reform many of the present excesses in government expenses.

The Closed Car Demand

MANUFACTURERS are at last beginning to sense the public demand for closed car sufficiently to alter their ideas on the percentage of closed cars that should be produced. One prominent concern plans to make its output for 1920, 60 per cent closed cars. Others have jumped from 18 to 20 per cent to 35 and 40 per cent.

The closed car is gaining popularity and the manufacturers who wish to make their production line up with the demands of the public should revise their ideas on the closed car production schedule. Present business conditions in the automobile industry are abnormal and the manufacturer can sell anything that he produces.

This condition will not endure forever. During the present advantageous conditions, manufacturers should take the opportunity of feeling the pulse of the public through their dealers in order to learn what percentage of closed cars should be produced in their particular price field. The percentage in the more costly cars naturally should be larger than in the lower priced but in all classes, the demand is growing rapidly.

A canvass of automobile users shows that there is an ever growing class which never puts down the tops of its cars and any man who drives with the top continuously up is a logical prospect for a sedan or coupe. Dealers realize this and have been demanding closed cars from the factories for the last three years, but it has been difficult to get the manufacturer to line up his production so that it is proportional with public demand for cars of this type.

Now is the opportunity to revise production schedules so that they will coincide with demand.

Spotlight Brackets Needed

IT is time that the manufacturer took into recognition the fact that in a great many sections of the country more than 50 per cent of the cars are equipped with spotlights. While putting the spotlight on the car as standard equipment may or may not be good policy, it is certain that the manufacturer should provide a good mounting for the spotlight. The windshield support is positively dangerous for this purpose, inasmuch as mounting the spotlight on the left side of the driver at approximately the same level as his eye creates a blind spot which effectually cuts off his vision of traffic coming in from the left side.

Many collisions can be directly traced to this cause, and car owners are completely at a loss to know where to put the spotlight in order to overcome this difficulty and, at the same time, have it shine on the right side of the road to disclose a ditch which may exist there when turning out for a car with a blinding headlight.

Greater Production Is Appeal To All Workers and Makers

The Council of National Defense, in an Analysis of Living Problems, Finds That the Nation's Productive Powers Are Not Being Realized to the Fullest—Urge Higher Output—Appeal Is Directed to Entire Nation

WASHINGTON—The following letter has been addressed to the people of the United States by the Council of National Defense:

To the Public:

The United States Council of National Defense, composed of the Secretaries of War, Navy, Interior, Agriculture, Commerce and Labor, has made a careful investigation of the high-cost-of-living problem, and finds:

That the nation's productive powers have not been fully utilized since the armistice.

That too few goods, notably the necessities of life, have been produced, and that even some of these goods have been withheld from the market, and therefore from the people.

That the high cost of living is due in part to unavoidable war waste and increase of money and credit.

That there has been and is considerable profiteering, intentional and unintentional.

The council believes that the remedies for the situation are:

To produce more goods, and to produce them in proportion to the needs of the people.

To stamp out profiteering and stop unnecessary hoarding.

To enforce vigorously present laws and promptly to enact such further laws as are necessary to prevent and punish profiteering and needless hoarding.

To bring about better co-operation and method in distributing and marketing goods.

To keep both producer and consumer fully informed as to what goods are needed and as to what supplies are available, so that production may anticipate the country's demands.

Goods and not money are the means of life. Better standards of living are impossible without producing more goods. Man cannot consume what has not been produced.

At the war's end our allies had desperate need of the essentials of life. We have had to share our resources with them, but this drain will gradually lessen. In so far as our shortage of goods is due to this cause we can well afford to be patient.

It is just as essential that we have patience with the economic situation here at home. The process of production requires time. If production is rapidly increased, vastly improved conditions will prevail in America when the results of present and future labor begin to appear.

Team work is imperative. It is just as essential between retailer, wholesaler, and producer, as it is **between employer and employee**. One group of producers cannot wait on another group. The manufacturer, the farmer, the distributor must each immediately assume his part of the burden and enter upon his task. The nation cannot afford curtailment of goods vital to the people.

On American business rests a grave responsibility for efficient co-operation in bringing about full and proportionate production. On American labor rests an equally grave responsibility to attain maximum unit production and maintain uninterrupted distribution of goods if labor itself is not to suffer from further rises in the cost of living.

The entire nation—producer, distributor, and consumer alike—should return to the unity that won the war. Group interest and undue personal gain must give way to the good of the whole nation if the situation is to be squarely met.

Our common duty now, fully as much as in the war, is to work and to save. In the words of the President, in his address to the country on Aug. 25, 1919, only "by increasing production, and by rigid economy and saving on the part of the people, can we hope for large decreases in the burdensome cost of living which now weighs us down."

Work, save, co-operate, produce.

(Signed) Newton D. Baker,
Secretary of War and
Chairman of the Council;
Josephus Daniels,
Secretary of the Navy;
Franklin K. Lane,
Secretary of the Interior;
David F. Houston,
Secretary of Agriculture;
William C. Redfield,
Secretary of Commerce;
William B. Wilson,
Secretary of Labor;
Grosvenor B. Clarkson,
Director of the Council.

London-Paris Airline Proves Successful

NEW YORK, Oct. 1—Success of the London-Paris aerial line has been proven by its first six weeks of operation, according to news dispatches received here. This information shows that the machines have flown in excess of 10,000 miles and that, out of 42 scheduled flights, only one was not completed. This record has been made despite hampering weather conditions at the start, it was said.

The average time of flight has been 2 hr. 15 min., the longest trip having consumed about three hours. Passenger bookings have been satisfactory, it was said, and a large amount of express was being carried. Banks have begun to use the line for the transfer of money and papers, the dispatches stated, and one London newspaper has made arrangements to have French advertisers use the service. The "ad" copy may be turned in to the branch at Paris at 9:30 o'clock in the morning for appearance in the London papers of the following morning, the airplane delivering it during the afternoon.

English Car Works Acquires Darracq

LONDON, Sept. 20—(Special Correspondence)—The Talbot Car Works, here, have been acquired by the Darracq interests, whose headquarters are in Paris.

This company is largely run on British capital, and for a long time it was known that a British factory was being looked for, among the number being the former big works of the Argyll Co., near Glasgow, since absorbed by the Armstrong White-worth Co. whose headquarters are at Elswick, Newcastle-on-Tyne. It is believed that as the Darracq Co. has concentrated on a single model for some years, their taking over the Talbot factory must lead to the suppression of that car. It is hoped that this fear will not be realized. The new genuine post-war Talbot car with its markedly neater appearance, etc., compared with the former Talbots, should ensure it a favorable appeal to the British motorists.

Chicago Firm Will Have London Depot

LONDON, Sept. 30—The Buda Co., of Chicago, is establishing a London depot under the management of Lieut. Col. R. F. Chaplin. Buda engines are often seen here on both trucks and tractors, which fact, apart from the prospects of the sales of new engines, has long made it desirable for the makers to have a British distributing center for spare and replacement parts.

The Waukesha engine, Buda's chief rival so far as tractors are concerned, has been represented here with a depot for some time, this being maintained in the British branch of the Markle & Hannicker Co., New York.

The Buda Co., according to a report, is going to make a strong drive for business here. At the time of this writing, the address of the depot had not been announced but the office address is 11 Haymarket, London W.

BRITISH PLANE MEN TURN TO VEHICLES

Improvements in Appearance and Lighter Bodies in English Makes

LONDON, Sept. 20.—(Special correspondence)—Although the recent announcement of a big revision and curtailment of the sum—some 60 million pounds (\$300,000,000)—to be spent yearly on British air services, had prepared those most concerned for a set-back in their schemes of air progress, and the development of the newest national industry, it was not anticipated that the Air Ministry would practically decide to cut its support of aircraft. This has caused wholesale cancellation of government orders at short notice.

The Handley-Page Co. is dismissing 1,000 of their workers, the Nieuport staff is being reduced by one-half, and other firms are turning their attention to the manufacture of motor-car bodies, motor cycles, boats, and milk-churns.

It was hoped before the armistice that so great would be the demands of civil aviation that almost the whole of the elaborate organization built up for the necessities of war, would be turned at once to the satisfaction of demands for civil craft. Optimists believed that within two years aircraft would be as essential a part of the national life as the railway system. Ten months of peace have disillusioned many people. Manufacturers have had twelve months in which to decide whether they want aircraft in their business. So far there has been no vigorous demand, and that is the case for not maintaining at public expense a great organization for which the contrary has no need.

As good sometimes is gotten out of evil, it is hoped that the much-looked-for improvement as regards appearance and reduction of weight of British car bodies will now be brought about by the aircraft tradesmen set free to take up such work. Already the AVRO firm, makers of the AVRO aircraft, has announced their intention to build a high grade car of about 1,250 lb. weight, to sell at 300 pounds (\$1,500), employing the materials and craftsmanship, and experience gained by aircraft making. The Sopwith Co. is making a motor-cycle, and the A. B. C. firm a motor-scooter, while Whitehead, the chief of the now closed Whitehead factory, is piloting a new company to make a popular car of which it is being reported some 150,000 are to be built.

It may be added that rumor is about the Midlands that a local, war-built big motor factory is likely to pass into the hands of the Ford Co. If there is truth in the report, it will involve a turnover of at least two million pounds (\$10,000,000).

There is a report also that one of the three big American tire companies established here is going to start manufacturing in this country. The particular company mentioned is one that is concentrated greatly on the development of air tires for trucks, and the report that there is a prospect that the busses of the London

General Co. being fitted with air tires in the near future perhaps has something to do with the present rumor.

It may be noted in this connection that the new London motor busses will weigh about 1,000 lbs. less than the pre-war type and will carry more people. Allowing a gross tare of 10,000 lbs., it is probable that the rear wheel fitted with twin pneumatic tires would carry the load without undue wear.

Publication of this issue of Automotive Industries has been delayed by conditions over which the publishers have had no control. Further October issues will be forthcoming as rapidly as they can be printed.

Insurance Rates Down in California

LOS ANGELES, CALIF.—A reduction of 25 per cent in rates for fire, theft and collision insurance on motor cars has been announced by the insurance department of the Automobile Club of Southern California. F. L. Baker, president of the club, in announcing the reduction, declared that it meant a saving of \$5,000,000 for the next five years for motor car owners. Rate cuts since 1912, when the department of the club was first organized, are estimated as having saved more than \$4,900,000 to owners in this part of the United States as insurance companies have followed the lead of the club in cutting their rates.

EXPAND CHEVROLET BRANCH

NEW YORK, Oct. 2—Additions to the assembling plant of the Chevrolet Motor Co., at Fort Worth, Texas, are being made at a cost of about \$200,000, according to an announcement from the company offices here today. Greatly increased production was planned from the additional facilities. The Fort Worth unit is one of the eight such plants of the company.

EUROPE NEEDS TRACTORS

WASHINGTON, Oct. 1—The prospects of farm tractor sales in Europe are increasing with the return of European farmers to pre-war conditions. The Department of Agriculture has received information that crop prospects in Eastern Europe are considerably better than the previous official reports indicate. Bulgaria and Hungary are now on practically a pre-war basis. Roumania is still suffering and will require time to resume normal operations. The population which evacuated eastern Poland and western Russia during the war is returning and again beginning to cultivate wheat.

The governments of Poland, Roumania, Croatia and Slavonia are now limiting the size of an agricultural estate to maximums of from 500 to 1,000 acres, the land in excess of these limits being distributed among the peasants. Roumanian peasants have established co-operative societies for the purchase and use of farm tractors.

AMERICAN CARS MAY ENTER GRAND PRIX

Cylindrical Capacity to Be 183 Cu. In. and 1653 Pounds Minimum Weight

PARIS, Sept. 17 (Staff Correspondence)—A cylindrical capacity of 3-litres (183 cubic inches) and a minimum weight of 1653 pounds are the essential conditions of the Grand Prix de France, which will be run next September over a fast course near Le Mans. These rules are practically the same as those adopted by Indianapolis and will enable the American cars to be entered.

The race will be for a distance of about 500 miles over guarded macadam roads, which will be treated with tar before the race in order to make them dustless. The exact course has not yet been decided on, and will not be known for some time; the district, however, offers plenty of choice.

This race is not being held by the Automobile Club of France, but by the provincial club of Le Sarthe, which has its headquarters at Le Mans. In 1914 this club had a racing program all prepared, and had secured a record number of entries; the war, however, prevented the races being run. While the national club is hesitating, the Sarthe Club has made a definite announcement regarding its program, and has officially informed the Automobile Club of France, the controlling body, of its intention to put a race on foot. It is unlikely that the Automobile Club of France will refuse permission of this race to be held.

A meeting of the sporting commission of the Automobile Club of France will be held at the end of the present month, when a decision will be reached regarding the racing program. The general belief is that the national club will decide not to race, but will grant a license to the club at Le Mans to hold its speed contest.

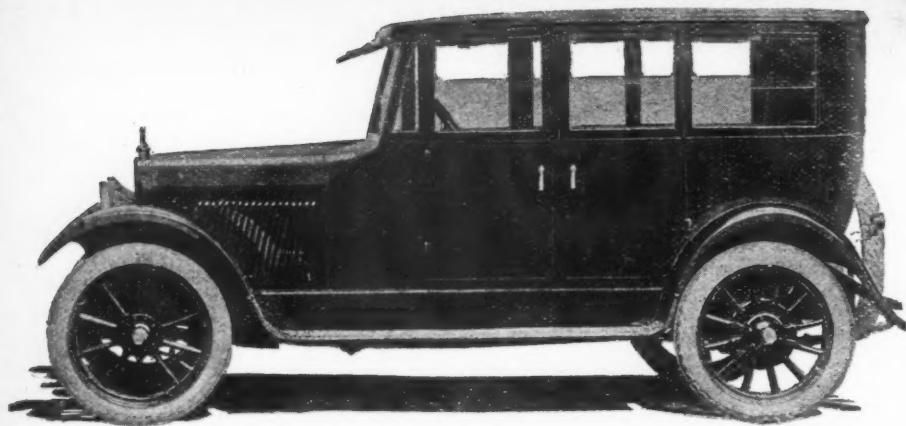
Possible entrants for the Grand Prix de France are:

| | |
|-----------------|-------------------|
| Peugeot, | Fiat, |
| Delage, | Sunbeam, |
| Ballot, | Bentley, |
| Gnome & Rhone, | Isotta-Fraschini. |
| Rollain-Pilain, | |

Most of these firms have prepared drawings of their racing engines, and one of them is in construction. There is a belief, too, that American entries can be obtained for a French race held during the month of September. No American car has taken part in a big French race since 1907 when Walter Christie made a very unconvincing display with his front-drive racer on the Dieppe course.

Germans to Compete With U. S. Makers

WASHINGTON, Oct. 2—It is announced from Cologne that a number of large German motor car firms have combined to compete with the United States in the production of cars. The association is to unify manufacture by adopting American methods, each factory working to produce as large quantities as possible.



Instead of building the top to fit the body, the Lexington Motor Co., in its new closed model, has made the body conform to the top. The harmonious result is shown above

NORWAY MARKET FINE FOR AMERICAN CARS

Halvor Andresen Sees Bright Future There for U. S. Tractors, Trucks and Cars

NEW YORK, Sept. 26.—American tractors, trucks and passenger cars have an excellent opportunity to dominate the market in Norway for several years, in the opinion of Halvor Andresen, an engineer who is in this country as the representative of Oscar Amundsen & Co., machinery handlers of Christiania, seeking to obtain a line of trucks and also passenger cars for this firm. This company has previously sold American tractors but has not sold the other lines.

"We have had a rapid influx of American tractors during the last two years, mostly through purchases at cost price from Government," Andresen said. "Some of these cars were badly placed, as a large tractor would go to a small farm and some were not adapted to the hills. But, in the main, the impression was good and we expect a good sale of tractors now that they are better understood. It was unfortunate that some companies sent three wheel tractors to Norway, as, in the main, the hills are too steep for this style of tractor. The creeper type we still regard as an experiment. With better engineering on the chain tread, they might prove popular in our country.

"We have seen no German cars in Norway so far, except the 'war babies.' These cars are crude and the best we have had so far have the queer war time wheels and, of course, lack rubber tires. They quickly shake themselves to pieces on our rough streets.

"Before the war, most of our motor cars came from Germany and Belgium and some better cars from England and France. Our people liked the cheaper German cars because they were substantial and because there was something of standardization in the parts. The Adler taxicabs that are on our streets are a good example. These cars have been running now for six years

with a minimum necessity of repair and are giving good service.

"Practically all of the better known lower priced American cars are sold in Norway. They are proving popular and we think they will hold this popularity and be able to meet the German and other European cars in competition for at least a number of years. The prompt service that goes with the American cars is a big advantage."

The present demand for trucks, Andresen said, was almost entirely for gasoline engines. During the war, many electrics were sold there and they did good work while gasoline was scarce, but the grades are so heavy that the charge carried by the present storage batteries does not furnish power for long enough trips and there is too much time lost in recharging.

Not until a greater capacity storage battery is obtained will these trucks oust the gasoline truck, despite the low cost of operation due to cheap water power sources of electricity.

MASON TIRE TO INCREASE CAPITAL

CLEVELAND, Oct. 1.—Stockholders of the Mason Tire & Rubber Co. have voted to increase the capitalization of the company to \$7,500,000, the new capital to consist of \$5,000,000 preferred stock and \$2,500,000 common stock. The present capitalization is \$3,000,000, consisting of \$2,000,000, 7 per cent cumulative preferred par \$100 and \$1,000,000 common par at \$10. The additional \$1,500,000 is to be Series B non-voting but fully participating, while the additional \$3,000,000 of preferred is to be of the same class as that outstanding at present.

TRINIDAD BUYS CARS

WASHINGTON, Oct. 1.—The Trinidad agency of one American automobile manufacturer sold ninety-six new cars in three months, of which forty-nine were passenger and forty-seven were one ton trucks, according to a report from the American vice consul at Trinidad. More than 1,000 licenses for motor cars were granted during the first seven months of 1919, showing an increase of 175 since the first of the year. The excellent condition of roads and streets in Trinidad facilitates the use of both passenger cars and motor trucks.

ATTEMPT TO LIMIT HAULAGE BY TRUCK

California Commission Opposes Motor Freight— Threaten Appeal To Courts

LOS ANGELES, Sept. 26.—Motor truck interests that have sought for years to encourage widespread use of trucks in connection with freight shipping claim to be amazed at the attitude of the California Railroad Commission and there is talk of court appeal for restraining orders. The legislature has vested control of motor trucking outside of the corporate limits of cities when done for hire, in the railroad commission and within corporate limits in the boards of utilities.

Steam and electric railroads are opposing applications from truck freight line operators on the grounds that unlimited competition from this source will be ruinous to the business. Truck interests are not disposed to question the need for some direction of motor freight lines but they do object to the way the subject is being handled by the commission.

An instance is cited which serves as an example, truck men say. A few days ago the railroad commission was asked for a franchise by a motor freight line operator. Pending action on the application, the trucks began hauling freight of a semi-perishable nature. The operators were notified to stop hauling. Request was made for a temporary permit in order not to tie up the shipment. The work had been contracted for and the truck owner stood to lose several hundred dollars through delay.

The commission is reported to have told the operator he could not operate over the highways as a public carrier. He was refused a temporary permit and told final action in his case would not be taken for weeks. Many motor trucks are sold to men who expect to pay for them through their earnings.

"Ship by truck" and that kind of propaganda looks good on paper but it doesn't get by the Railroad commission and help pay for trucks, dealers in Los Angeles say.

Bellanger Orders Are Being Withheld

DETROIT, Sept. 30.—Briscoe & Stahl, American representatives and purchasing agents for the Bellanger Bros., Paris, who recently designed a car for this concern to be assembled in France with a number of the component parts secured in America, are withholding orders at the present time. Satisfactory credit arrangements have not as yet been established in New York and Benjamin Briscoe is in Paris at the present time for the purpose of clearing up this and other pending matters. Mr. Briscoe will return about the middle of November and it is intended to commence shipment of parts to France shortly after that time.

The French concern will show a new 3½ by 5 in. eight-cylinder car at the Paris show.

ROLLS-ROYCE FORMS AMERICAN COMPANY

*Will Build the English Car in
America—Capitalized at
\$7,000,000*

NEW YORK, Sept. 26—Plans were announced here today for the formation of a corporation capitalized at \$7,000,000 to manufacture Rolls-Royce cars in this country. The announcement was made by Aldred & Co., bankers at 24 Exchange Place, that they had agreed to finance the proposed corporation as a branch factory of the English firm of Rolls-Royce, Ltd. It will be financed entirely by American capital as, under present war acts, British capital cannot be transferred to other countries for industrial purposes.

The American company, however, will manufacture a chassis practically identical with that made in England. The Rolls-Royce aero engine, parts of which were built in America during the war, also will be constructed at the new factory, the location for which was not announced.

Plant Location Unknown

The financial plan, in itself partially incomplete as yet, was the only detail announced. It was said that the stock would be offered for sale in about two weeks, despite the fact that some of the organization plans have not been perfected. The name of the new corporation probably will be Rolls-Royce of America, Inc., and at least some of the company personnel will be Englishmen from the home factory.

Announcement of the plan preceded by a few hours the departure of Claude Johnson, directing manager of the English company, on the steamer Cedric for Liverpool today. Johnson, who spent some time in America

earlier this summer, returned here last week and has been in daily conference with financial and manufacturing men.

Location of the proposed plant and the production plans could not be ascertained from the local branch of Rolls-Royce, Ltd., at 23 William Street. Maurice H. Olley, the company engineer here, said that it would not be determined for at least two weeks whether the American company would purchase or build a factory in this country. Several plants used in munitions making during the war have been under consideration and it has been intimated that the factory would be located somewhere in the New England states.

The announcement of the bankers was to the effect that the American company would "have all the advantages of Rolls-Royce design and knowledge" and that the chassis and engines manufactured in this country would be of the "same standard" as those made in Great Britain. The announcement also set forth that the plant was made necessary by the American demand for Rolls-Royce cars which would not be met from England, as the plants there have booked orders that will occupy them for some eighteen months.

The price of the chassis was stated as being \$10,000 and the company was said to have branches already established in New York, London, Paris, Madrid and Bombay.

\$1,750,000 WORTH OF CHEVROLETS FOR TORONTO

TORONTO, ONT., Sept. 27—G. E. Goderham & Co., distributors of Chevrolet cars and trucks, have just signed a contract with the Chevrolet Motor Co. of Canada, Ltd., Oshawa, valued at practically \$1,750,000 for cars and trucks for the city of Toronto, which is probably the largest retail motor car contract ever made in Canada for the distribution of cars within one city.

Wisconsin Motor Co.

Resumes Operation

MILWAUKEE, WIS., Sept. 27—The Wisconsin Motor Mfg. Co., which has been partly strikebound for nearly a month, is again in full operation. The men received a 5 cent increase in the hourly wage on July 1 and on Aug. 1 demanded a similar advance, later striking to enforce closed shop, collective bargaining, and higher wage demands.

The strike was settled without concession of the closed shop, and the men go back to work on a compromised wage, amounting to 5 cents an hour among workers in service a year or more; 2½ cents for those employed over six months, and 2 cents for those under six months.

Plan Highway From

St. Paul to South

MEMPHIS, TENN., Sept. 26—With every mile of the Mississippi River Scenic Highway, from New Orleans to St. Paul, under a division organization, the annual meeting of the Mississippi River Scenic Highway Association, held here Sept. 16, marked the real beginning of the campaign for this highway, construction of which is largely due to automobile and truck owners, and automobile dealers from St. Louis southward to New Orleans.

The association has been incorporated for some months, but the detailed plans of raising funds and construction, as well as an extensive publicity campaign, were discussed and decided on at the meeting here. The aim of the association is to construct a hard-surfaced highway from St. Paul to New Orleans. The Mississippi Valley Association and the Mississippi Valley Waterways Association are assisting in every way possible.

COMMONWEALTH MAKES CHANGES

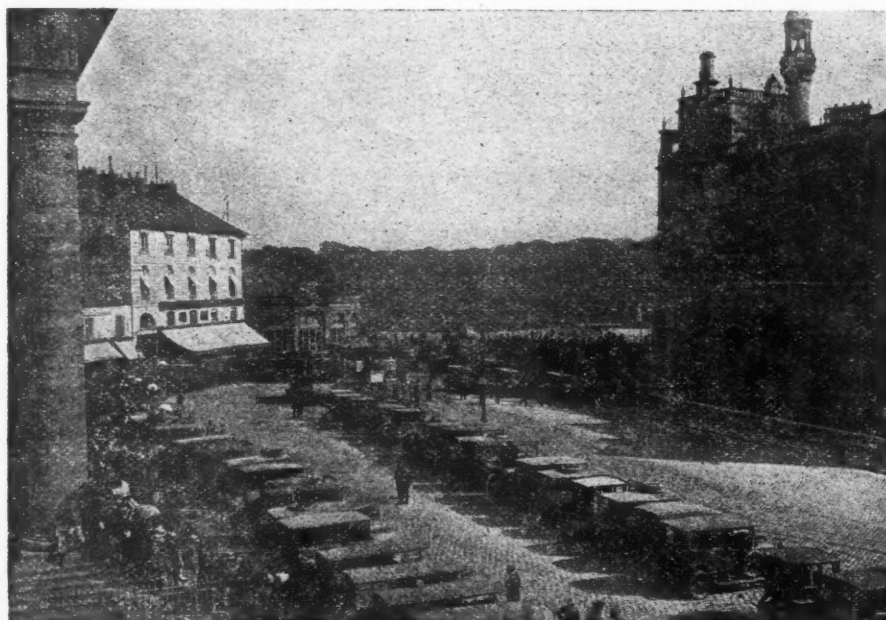
CHICAGO, Sept. 27—The Commonwealth Motors Co. soon will have the 1920 Ultra-4-40 ready for delivery. This car does not differ radically from the 1919 model excepting that the rear axle has a spiral bevel drive, the springs are semi-elliptic all around, and the rear set is underslung. The tires have been increased from 32x3½ to 32x4, and the wheelbase has been increased 2 in. to 117 in. The price has been increased from \$1,195 to \$1,395. There have been other minor refinements made throughout the chassis and body but otherwise the car is the same as the 1919 model.

BRISCOE EXPANDING

JACKSON, MICH., Sept. 27—The Briscoe Motor Corp. plans the extension of its manufacturing capacity, and has sold 45,000 shares of new common stock to secure the necessary funds. Production is now running at 1,500 cars a month.

FOREIGN IMPORTERS LISTED

WASHINGTON.—A list of importers and dealers in automobiles and accessories for Europe, Africa and Canada may be obtained from the Bureau of Foreign and Domestic Commerce by referring to file No. 9846.



When Austria Signed the Peace Treaty

Here are the cars that carried the Austro-Hungarian peace delegation to the signing of the Austrian treaty at the Palace of St. Germain

CAROLINA DEALERS FORM ORGANIZATION

*Nearly 300 Dealers of Two
States Meet at Charlotte—
Folger Named President*

CHARLOTTE, N. C., Sept. 25—The Carolinas Automotive Dealers' Association was formally organized here yesterday when automobile dealers from all parts of the two Carolinas, in session at the City Auditorium, adopted the report of a nominating committee as to officers for the new association. The conference also formulated the principles that will be embodied in the by-laws and constitution.

The officers elected for the new association were: President, Lee A. Folger of Charlotte; vice-president, A. M. Gibbes, Columbia, S. C.; second vice-president, H. S. Dowling, Charlotte. The secretary-treasurer will be named by the directors.

The directors from North Carolina are: Lindsay Fishel, Winston-Salem; W. D. McMillan Jr., Wilmington; E. C. Sawyer, Asheville; M. A. Rushton, Raleigh. From South Carolina they are: E. V. Plane, Columbia; E. F. Bates, Greenville; A. H. Wichman, Charleston, and H. F. Dargons, Florence.

The nominations committee was headed by Lindsay Fishel of Winston-Salem; the credentials committee by U. B. Blalock of Wadesboro.

The organization started with a membership of approximately 300 and it is ex-

pected that a majority of the dealers of the two states will be enrolled within a short time. Folger, the new president, read a number of telegrams from dealers in the two states who expressed their inability to attend the organization meeting, but who said they were heartily in sympathy with the plans for organization.

Features of the afternoon session of the convention were the addresses by George Fritz, national field secretary of the Automotive Equipment Association, and Harry G. Moock, business manager and secretary of the National Automobile Dealers' Association.

WATSON TO MAKE TRUCKS

CANASTOTA, N. Y., Sept. 27—A new line of motor trucks to be made by the Watson Products Corp. will be put on the market within the next few months. Plans were completed over a year ago, but manufacture was postponed because of the war.

Exact features and specifications have not yet been given out, but it is understood that the plans call for a $\frac{3}{4}$ -ton, $1\frac{1}{2}$ -ton and $3\frac{1}{2}$ -ton model.

The Watson Products Corp. is the new name of the old Watson Wagon Co., which was started thirty-one years ago to make heavy hauling wagons. On July 1 of this year the name was changed to the Watson Products Corp. and the capital increased from \$600,000 to \$1,000,000.

The company has also bought several concerns in its vicinity to increase its factory facilities preparatory to the launching of its trucks.

Smith Corporation To Double Capacity

MILWAUKEE, WIS., Sept. 27—The A. O. Smith Corp., Milwaukee, one of the largest manufacturers of automotive parts in the world, announced today that arrangements have been completed for the enlargement of its works at a cost of more than \$4,000,000, to increase the capacity approximately 100 per cent.

A tract of 20 acres adjoining the present works at Twenty-seventh and Hopkins streets will be utilized for a series of large additions, work on which will begin immediately.

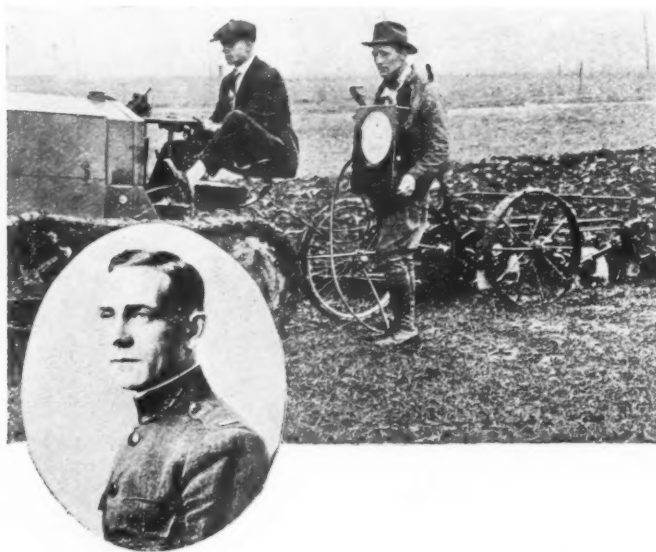
The additions will provide a total of 400,000 sq. ft. of floor space. The present working force of more than 2500 operatives will be increased in groups to 5000 or more. About 400 men are now being added as rapidly as competent help becomes available.

Smith at present is the largest maker of pressed steel frames for passenger and commercial cars in this country. It manufactures other pressed steel shapes, drop forgings, axle housings, etc., for about sixty-five motor car builders, the principal customers being Buick, Dodge, Studebaker, Oakland, Oldsmobile, Reo, Paige, Kissel, Mitchell, Scripps-Booth, Chevrolet and Nash. Practically the entire output of the Smith company is sold under contracts.

For the purpose of providing imperatively needed additional facilities, the Smith company is making an issue of \$3,300,000 of five-year 6 per cent sinking fund gold notes, dated Oct. 1, 1919. The issue was subscribed in less than a day.

It is intimated that the bank consolidation, effective on July 1, is destined to make Milwaukee one of the largest centers of the automotive industries.

American Instrument Used in British Test



In a recent issue was printed the conditions of the tractor trials which were held in Lincolnshire, England, last month. The dynamometer tests were made on an American instrument, the Hyatt, which has been used at the tractor demonstrations in this country for several years past. J. E. Martin, of the Hyatt Roller Bearing Co., tractor division, had charge of the dynamometer tests. The photograph shows the dynamometer in use. It consists of two main gears, one registering the pull and the other recording the elapsed time and distance traveled, thus giving the speed made by the tractor. Speed of travel and pull together determine the drawbar horsepower. In the picture can be seen the light wire wheel interposed between the tractor and plow, from which connection is made to the speed recording device. The inset is a photograph of J. E. Martin

Highway Council Takes Over Transport Body

WASHINGTON, Sept. 27—The Highways Transport Committee of the Council of National Defense, organized early in the war to promote the development of highways and general motor truck and automobile traffic, will disband in the near future. Its work will be taken over by the Federal Highway Council, which has been assured of the co-operation of the various Government departments that have heretofore been co-operating with the Highways Transport Committee. These departments include War, Navy and Agriculture, having worked with the committee for the standardization of traffic rules and the promotion of good roads.

The Highways Transport Committee, at the time of its organization, was headed by Roy D. Chapin, president of the Hudson Motor Car Co., who was called to Washington to take this work. He continued it until the armistice was signed.

The work of the Highways Transport Committee taken over by the Federal Highway Council will be under the supervision of Chas. W. Reid, who has been at the head of the committee since Chapin resigned. He will be manager of the Transportation Bureau of the Federal Highway Council.

Unusual Interest in English Tractor Trials

NEW YORK, Sept. 27—Cable advices reaching here this week told of the unexpected interest caused by the three-day tractor trials at Lincoln, England, under the direction of the Society of Motor Manufacturers and Traders, Ltd. The showing, which was in the form of a contest, opened on Sept. 25 and will close today. An attendance of 10,000, including farmers from all sections of England, was on hand the first day.

Forty-one machines took part in the plowing trials. Twenty-two of these were of English manufacture, one was Italian and the remainder represented American companies.

Canadian Showing Draws Many Visitors

OTTAWA, ONT., Sept. 25—The automobile show of the Central Canada Exhibition has been the most successful fall motor show ever held here, according to statements by various dealers at the recent exhibition, when over 300,000 paid admissions were registered.

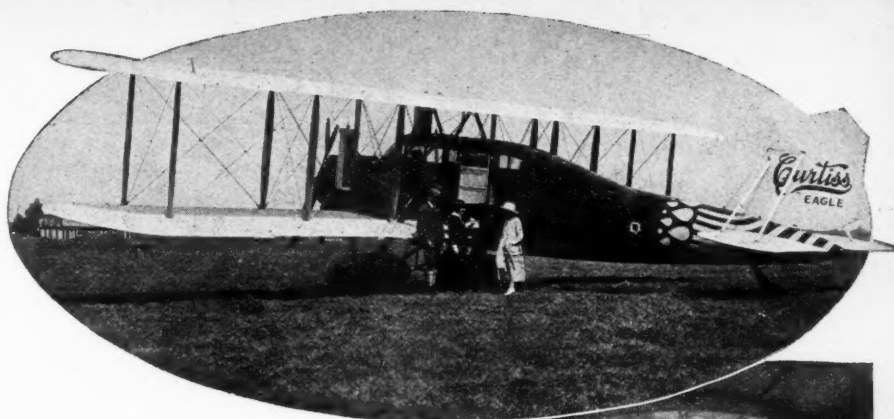
The consensus of opinion was that the showing has been the most successful from a business standpoint that has ever been supported by the local retailers. A number of orders for new cars were booked during the week and the value of the exposition was felt at all times. It is undoubtedly true that the current exhibition has been the most business-like and profitable of any fall show yet held here.

In view of the success of the show, the local trade is generally more favorably inclined to undertake the holding of an automotive exhibition in Ottawa during the coming winter. The fact that has emphasized its importance has been the appearance of a considerable number of factory officials at the exhibits. Representatives of the Dodge, Overland, Oldsmobile, Chevrolet, Gray Dort, McLaughlin, Briscoe, Maxwell, Ford and other companies were present.

The dates for the proposed Ottawa motor show would be from Feb. 21-28. The reason for the suggestion of this period is that it would immediately follow the Montreal motor show, which is held on the heels of the national shows in New York and Chicago. The Montreal exhibition will take place in February, following the Chicago show, so that special exhibits can be shipped from Chicago to Montreal. The Ottawa display should be held immediately afterward so that these special displays could be shipped direct from Montreal to Ottawa and thence to some other city.

PENNSYLVANIA TIRES UP

NEW YORK, Sept. 30—New prices for the tires and tubes of the Pennsylvania Rubber Co., manufactured at Jeannette, Pa., were announced here today to take effect tomorrow. The company has made two reductions this year, one in the spring and the second on July 19. The new increase, stated to be caused by a rising market for material, brings the cost above the early spring rates.



The New Three Motored Curtiss Eagle



The new Curtiss Eagle, fitting three Curtiss K-6 motors, was designed exclusively for commercial purposes. It has just made its initial appearance. The views herewith show the plane itself and the interior of its enclosed limousine fuselage in which are eight individual upholstered chairs. The machine has a rated speed of 107 m.p.h., with a flying radius of 475 miles and climbs 4075 ft. in ten minutes. Its useful load is stated to be 2000 lbs.

Plans Under Way For Cleveland Show

CLEVELAND, Sept. 27—The nineteenth annual automobile show will be held in this city Jan. 17-24. Announcement of the date of the show was made by directors of the Cleveland Automobile Manufacturers' and Dealers' Association, who will have charge of the exhibition. The show will be held in the Wigmore Coliseum, East Thirteenth Street, near Euclid Avenue, the site of the exhibit last year, but more space will be available for the coming event. The additional space will be in the annex to the Euclid Square Building, of which the Coliseum is a part, between Dodge Court and Chester Avenue, N. E. It has a floor on the same level as that of the Coliseum and forms a fitting adjunct to it.

Directors of the show had this space in mind last year when arrangements were under way for the 1918 exhibit, but the space was then being used for the storage of government trucks. This annex will provide almost one third more space than was available last year, all of which will probably be taken.

R. J. Schmunk is president of the organization in charge of the show; G. G. G. Peckham is first vice-president; F. E. Stuyvesant, second vice-president; M. L. Bridgman, secretary; M. B. McLaughlin, treasurer; Fred P. Brand, S. C. Carris, F. H. Cushman, A. R. Davis, C. A. Forster, H. O. Secrest and T. H. Towell are the directors. Fred H. Caley, secretary of the Cleveland Automobile Show, remains as manager and in charge of the executive details of the exhibit. Additional plans will be announced later.

Bill Against Thefts Proposed in Ohio

COLUMBUS, OHIO, Sept. 27—P. E. Thomas, warden of the Ohio Penitentiary, has prepared a bill for the lessening of automobile stealing, which will be presented to the Ohio Legislature when it re-convenes in November.

In brief, the plan provides for a system of ownership cards bearing the serial number of the engine, description of the car and car owner.

The proposed law will also license gasoline dealers and compel them to sell gasoline only to holders of ownership cards. It is believed by the author that this system would prevent thefts of automobiles for commercial purposes.

KARDELL TRUCKS AND TRACTORS

ST. LOUIS, Sept. 26—The Kardell Tractor & Truck Co., a \$1,000,000 Delaware corporation, has begun the manufacture of farm tractors here, occupying the plant formerly owned by the Whitman Agricultural Co., 6900 South Broadway, St. Louis.

Full production, it has been announced, will start about Jan. 1 and the schedule for 1920 calls for 5000 tractors. One of the completed tractors will be sent to Los Angeles to take part in a tractor demonstration.

All the parts will be made in the plant except the engines and wheels. The engines will be manufactured by the Wisconsin Motor Co., Milwaukee, and the wheels are of French & Hecht make, according to the announcement.

DEALER MAKES AIR TRIP TO FACTORY

Frint, of Milwaukee, Urges Greater Production, Dropping Dodgers from Airplane

MILWAUKEE, WIS., Sept. 27—History was made in the Wisconsin dealer trade during the week when Leslie D. Frint, Oldsmobile distributor, made a real flying trip to the factory at Lansing, Mich., using his Curtiss JND4 airplane. It was the first time that a dealer or distributor in this part of the country has essayed to call on the manufacturer in this manner.

Frint, some time ago, purchased a Curtiss flying machine and organized the L. D. Frint Aeronautical Co., to establish an aerial taxicab line. He leased a large field at North Milwaukee, built a hangar and advertised trips at \$10 and upward. The ship was campaigned on the country fair circuit in Wisconsin this fall.

Frint left at 9:42 o'clock Monday morning and arrived at Lansing at mid-afternoon, making a stop at South Bend, Ind., en route. The pilot was Lieut. H. R. Overly, late of the army air service, who is now acting as Frint's aeronautical manager.

The ship carried a large supply of red, white and blue dodgers, which were dropped from the sky as the travelers arrived over the Olds Motor Works. The dodgers were in the form of an S. O. S. message, urging the plant to "whoop 'er up" and supply more passenger cars and trucks.

"I am up in the air for your answer," said Frint, actually and figuratively, in the dodger.

Before returning to his airport at Milwaukee, Frint intends to make a side trip to Detroit, and also to stop off at Cleveland.

FREE ENGINEERING COURSE AT COOPER UNION

NEW YORK, Sept. 29—A course in motor vehicle engineering will be given at Cooper Union this winter, beginning Oct. 1. It will include classroom work and laboratory study of engines. No fee is charged for the course, the laboratory charge being \$10. Those wishing to enroll should write for application blanks to the secretary, Cooper Union, New York.

MOTOR PATENTS CORPORATION

NEW YORK, Sept. 29—The Entz Motor Patents Corp. has been formed by the consolidation of the Entz Motor Patents Corp. and Owen Magneto Motor Car Corp., with a capital of \$1,200,000. Incorporators are: D. C. Durland, Racine, Wis.; G. F. Morrison, and R. H. Swartwout.

Hold Montreal Show Early Next Spring

MONTREAL, Sept. 27—An announcement is made that the Annual Montreal Motor Show will again be held under the auspices of the Montreal Automobile Trade Association, Limited, early next year.

This year there was no show, on account of the war conditions still existing at the time when preliminary arrangements for the event should have been undertaken. The active secretary of the association, Adelstan Levesque, states that practically all the Canadian and American automobile manufacturers will be represented, as they have already inquired about exhibiting space, and that inquiries had also been received from European firms anxious to secure space. The date and location of the show will be announced later.

Post-War Renault Here With New Features

NEW YORK, Sept. 27—What are said to be the first European post-war cars to arrive in this country are some new Renault cars just received by the Renault American branch here.

They embody a number of new features as follows: A silent, single unit S. E. V. starting system attached to the crankshaft at the front of the motor, making the starting dynamo extremely accessible; monobloc type engines in the 12-18 hp. and 18-30 hp. models. All motors have a three-point suspension on the main frame, instead of on a subframe as formerly. New automatic carbureter has the flange attached direct on the cylinder casting. Unusually high road clearance adapts these cars to American conditions.

The Renault branch here is located at 719 Fifth Avenue. Immediate delivery of the post-war model is promised by the company.

Many Makes Shown In Big Truck Parade

INDIANAPOLIS, Sept. 25—A ship-by-truck parade under the auspices of the Chamber of Commerce was held here today. The parade, in a manner, was intended to show the extent to which the gasoline truck will be used in this vicinity. It was a parade in honor of the master bearer of burdens.

There are now thirty-five truck routes which radiate out of Indianapolis. There is no doubt but what the parade did a great deal to strengthen the ship-by-truck campaign. Twenty-six different makes of trucks handled by local dealers were in line, and several local trucking and transfer companies participated.

Take All Space at Automotive Exhibit

CHICAGO, Sept. 27—An over-subscription of the exhibit space at the Medinah Temple here was reported this week by the committee having charge of the arrangements for the business exhibit of the Automotive Equipment Association to be held Nov. 3-8. Requests for space are continuing to arrive at the association offices and the stage of the big hall has been given over to some of the exhibitors. Interest was stated to be such that the success of the show was assured. Practically all of the arrangements for the big showing have been completed, with the exception of the hall decorations and the actual placing of the exhibits. Contracts have been let for the decorative work and this will be under way soon.

Ford Export Figure Doubled in Month

NEW YORK, Oct. 1—Production of Ford cars for export from the new plant at Kearny, N. J., has reached a daily figure of about 125, practically doubling within the last month, according to announcements yesterday by the export branch of the Ford Motor Co. here. That number represents about half of the present total output of the Kearny works, the remaining cars being sold in America.

Production schedules of 750 cars daily are planned for the plant and should be reached within a few weeks it was said, as the construction of additional facilities is being pushed rapidly. A majority of this output was declared to be destined for foreign shipment.

Export of Ford cars continues as heavily as permitted by production, with an unexpected demand having arisen recently for cars in Egypt, Asia Minor and the contiguous territories. Three shipments of cars for assembly already have been made to the new plant at Copenhagen while production at the proposed factory at Cadiz was set to commence in November.

ALLEN OUTPUT 100 WEEKLY

COLUMBUS, OHIO, Oct. 1—Production of passenger cars at the plant of the Allen Motor Co., which was recently removed to Columbus, has reached 100 weekly and an increase to 150 is planned within a few months. That number will have to be reached soon in order to carry out the plan of producing 7,500 cars the first year in the Columbus factory.

At a recent meeting of the stockholders it was decided to enlarge the board of directors by a reorganization. The new directors are W. O. Allen, J. F. Riehman, Charles F. Johnson, Frank L. Packard, Samuel N. Summer, B. W. Marr and Guy C. Bowman. The former members were E. W. Allen, George E. Schroth, W. H. Reedy, M. A. Thomas, George W. Campbell, S. L. McCune, E. T. Rugg and Gerrit J. Dickman.

Canadian Overlands Escape British Duty

TOLEDO, OHIO, Sept. 26—All Willys-Overland cars sold in Canada are now being manufactured, not assembled, in that company's Canadian branch at Toronto. Practically all units going into the cars are made of Canadian material. This course permits the Overland company to supply all British possessions with cars at a minimum export duty.

The Canadian plant, which, during the war devoted its entire resources to war work, is now back into peace production. Additional factory units are contemplated which will add 100,000 additional sq. ft. to the present plant, which now has a floor space of 280,000 sq. ft.

HARVESTER CO MANAGER DIES

CHICAGO, Sept. 27—C. E. Lord, manager of the patent department of the International Harvester Co., died here Sept. 25 as a result of injuries received when his motor car was struck by a switch engine entering the yards of the Deering Harvester Works.

Will Make 20,000 Cars At St. Louis

The Skelton Company Closes Contract for New Light Four Cylinder Car

ST. LOUIS, Sept. 27—The St. Louis Car Co. has just closed contracts to manufacture 20,000 motor cars for the Skelton Motor Corp., a company recently organized by Dr. L. S. Skelton. Production will start at once. The car company will convert for automobile manufacture its facilities that have been used for munitions and other war work.

The new car will be of the light 4-cylinder type and will be designed to compete with the popular-priced standard cars. E. B. Meissner, president of the car company, said to-day that his company expected to complete 50 or more machines daily. The present force of workers at the plant is 1200, but this number will be increased to 2000.

The announcement was made that parts of the car will be made here, while other parts will be supplied by standard parts makers. The ultimate aim, it was said, was to make the entire car here.

Offices for the Skelton company will be opened here. W. A. Chapman, former field secretary of the Dort Motor Car Co., is general manager of the new corporation. Doctor Skelton practised medicine at Vincennes, Ind., until 1893, when he went to Oklahoma for his health. He became a promoter and, in 1908, became interested in the oil fields of southern Kansas. He is interested in oil refineries, gas companies, cement, glass and brick factories and other enterprises.

Skelton announced here that he had obtained a controlling interest in the Premier Motor Car Co. at Indianapolis.

St. Louis Will Hold Ship-by-Truck Day

ST. LOUIS, Sept. 29—Ship-by-Truck Day in St. Louis will be Oct. 25. It will be declared so by a proclamation of the mayor, and there will be a parade of commercial cars of every description. Plans for the event are being worked out by a committee from the St. Louis Chamber of Commerce and the St. Louis Automobile Dealers and Manufacturers' Association.

Brooklands Track To Be Renovated

LONDON, Sept. 9 (*Special Correspondence*)—The famous but never quite satisfactory Brooklands motor track at Weybridge, which is reported to have cost Locke-King, a local land-owner, about \$1,000,000, fell into disuse during the war and in parts is in bad condition. It was taken over by the military authorities, who, it is understood, will contribute \$50,000 for renovating it. This work will begin soon and will entail the entire remaking of about 600 yards of the homestretch. The track has a cir-

cumference of about 2 miles, and has been taken at a rate of about 120 miles an hour by Hornung in a Benz. It is expected the track will be ready for next season.

Cleveland Expands For Higher Output

CLEVELAND, Sept. 27—To produce 15,000 tractors next year, almost double its present production, the Cleveland Tractor Co. is expending \$500,000 in new buildings and equipment. This will add about 97,000 sq. ft. to the present factory floor space.

Two shifts of workmen are being employed in an effort to meet demands. It is hoped to complete several thousand tractors before Jan. 1.

TEXAS TRACTOR PLANT

DALLAS, TEX., Sept. 27—The Texas Truck & Tractor Co. has been organized here with a capitalization of \$1,000,000 to manufacture tractors and trucks. Plans are being considered for the manufacture of a five-passenger automobile, especially adapted for farm uses.

Thomas P. Wharton is president of the concern. The directors are: N. K. Marshall, El Paso; Guy Vickery, Dallas; J. N. Nutt, Granbury; Mack Hardy, Paris; A. A. Maloney, Granbury; W. E. Grigsby, Decatur, Ill.; Albert Taylor, Luling; Thos. P. Wharton, Dallas; J. J. Gibson, Dallas; W. G. Davis, Wharton; E. G. Miller, Columbus; C. E. Jones, Lockhart; Dr. John L. Davis, Waco; A. E. Kern, Dallas; Edward Hastings, Duncanville; Dr. John B. Robinson, Lewes, Delaware; Robert E. Blumburg, Seguin; J. R. Westbrook, Deport; C. L. Greenwood, Luling; E. E. Barnett, El Campo; J. W. Lankford, Mertens; J. W. Satcher, Port Lavaca, and M. Button, Celina.

SEEK FRENCH SALES RIGHTS

NEW YORK, Sept. 27—Letters have been received here from the Etablissements de L'Approvisionnement Industriel of Paris seeking selling rights for American cars and accessories in France and Belgium and their colonies. The company announced that a large syndicate had just been formed, composed of the leading French agents of American manufacturers.

The address of the inquiring company was given as 13 Rue Auber, Paris, and it was stated that the concern has numerous agents throughout the territory for which selling rights were asked.

HAMMETT MOTOR TESTER SOLD

KANSAS CITY, MO., Sept. 20—The Hempy-Cooper Mfg. Co. has bought the Hammett motor tester, heretofore made by the Hammett Mfg. Co. The Hempy-Cooper Co. is now making the tester in its factory at 604-6 Delaware Street. A contract for exclusive distribution has been made with the Fairbanks company.

Push Production In Indiana Plants

Factories at Indianapolis Are Increasing Output—Announce the 1920 Schedules

INDIANAPOLIS, IND., Sept. 27—To help meet the demand for cars, Indianapolis manufacturers are doing everything possible to increase production. Practically every motor car maker in Indianapolis either is planning improvements or has improvements under way that will mean larger production.

A car output of 5000 is planned by the Nordyke & Marmon Co. Two new buildings are under construction that will give an increased working space of 350,000 sq. ft. This is in addition to the unit constructed for the manufacture of Liberty motors, now available for automobile making.

The National Motor Car & Vehicle Corp., according to George M. Dickson, general manager, plans the building of 6000 cars for the 1920 season. This is 2000 more than the company's former efforts.

J. J. Cole, president of the Cole Motor Car Co., is authority for the statement that the 1920 Cole production will be 6500. The William Small Co. expects to build a new factory in the spring which will permit an output of 10,000 cars. The production will go to 30,000, according to the company's plans.

Stutz is to double its capacity. William N. Thompson, treasurer and general manager, said the Stutz Motor Car Co. has never made more than 3000 cars annually; but with the completion of the new buildings production would go up to 6000. The production planned by the Premier, under its new direction, will be between 4000 and 5000, according to Charles Crawford, chief engineer.

The production has not been estimated in the plant that will be established in the Stenotype buildings by the new company headed by D. McCall White and C. E. Howard, formerly of the Cadillac organization.

\$251,000,000 to Settle Remaining Contracts

WASHINGTON, Sept. 27—An outlay of \$251,000,000 will be required to secure relinquishment of the \$1,794,000,000 of suspended contracts still unliquidated, assuming that future liquidation can be effected at the same rate of cost as has obtained in the past, the War Department has announced. The bureaus having the largest values of unliquidated contracts are: Ordnance, \$1,390,000,000; Air Service, \$250,000,000, and Purchase and Storage, \$134,000,000.

IBEX TIRE LOCATES

OSHAWA, ONT., Sept. 25—The Ibox Tire & Rubber Co., Oshawa, Ont., formed with a capitalization of \$300,000, will locate its head offices and factory here.

Cars Are Going To Farms In Canada

Ontario Figures Show Unprecedented Totals in Country Districts—Analyze Figures

TORONTO, ONT., Sept. 27—Farmers are coming into their own in Ontario in so far as the possession of motor cars is concerned. During the last five years the increase in the number of cars owned by farmers has been unprecedented in Canada. Statistics contained in the reports of the Ontario department of highways for last year testify to the many farmers who are replacing the horse with the motor car for utility and pleasure.

The report of the department shows that of 101,599 passenger cars owned in the province last year, 64,900 of them were owned in towns, villages and townships, and only 36,699 in the cities. Of the number owned in cities less than half were in Toronto, or 17,171. The registration totaled 109,374 cars in the province, including 7529 motor trucks. There was an increase of 25,584 in the number of cars of all kinds registered in the province in 1918 over the previous year.

It is also interesting to note, in an analysis of the occupation of the owners, that 37,758 of them are farmers and drovers, which exceed the number owned by any other class. The others are as follows: Skilled trades, 6634; business firms, 2106; merchants and manufacturers, 27,144; physicians, 2712; other professions, 3529; commercial travelers, 2507; agents, 2833; liverymen, 1784; soldiers, 634; government and corporations, 569; military departments and units, 365; unspecified and unoccupied, 13,270.

The classification of cars shows that 91,866 are touring, 7114 are runabouts, 2758 are coupes, sedans and limousines, 49 are taxicabs, and 53 are buses and ambulances. The bulk of the cars are 25-hp. and less, 84,018 being listed this way, of which 31 are 51-hp. and over. Four are steam cars and 162 electric cars. There are 10 trucks of six tons and over.

HEADLIGHT COMMITTEE APPOINTED

MILWAUKEE, WIS., Sept. 27—The Industrial Commission of Wisconsin has selected the following as members of an advisory committee to investigate and make recommendations of standards for motor car headlights: Adolph Graner, manager Wisconsin Magneto Co., Milwaukee, representing manufacturers and dealers; Harry A. Apple, secretary Wisconsin State Automobile Association; F. A. Cannon, secretary Good Roads Association of Wisconsin; M. W. Torkelson, bridge engineer, State Highway Commission; Francis A. Vaughan, electrical engineer, Milwaukee; John A. Hoeveler, illuminating engineer, Industrial Commission; John M. Sell, Milwaukee.

The 1919 state legislature amended the motor code to provide that adequate

standards for headlights be fixed by the Industrial Commission and that its orders from time to time become the law of the state in this respect. The code previously fixed a minimum requirement, providing that head lamps must be such as to enable a driver to distinguish clearly a person, vehicle or other substantial object 200 ft. ahead. The new maximum is to "avoid dangerous glare," subject to such definitive restrictions as the Industrial Commission shall fix.

Delco Light Bought By General Motors

NEW YORK, Sept. 29—Purchase of the Domestic Engineering Co. by the General Motors Co. has just been announced here by W. C. Durant, president of the purchasing concern. The Domestic company is the manufacturer of "Delco Light" and farm lighting systems and will be operated as a branch by the motors company.

Extensive plant additions will be undertaken immediately so that capacity may be increased greatly, it was stated, the company being continued under its present management, with E. A. Deeds the president and the directing head. The company has an annual production of about 30,000 lighting units. Its capital consists of \$1,200,000 common stock and \$2,300,000 seven per cent cumulative preferred, of which \$2,107,000 has been outstanding. The company was incorporated in 1916 with a capitalization of \$300,000 common and \$500,000 preferred. Agencies have been established throughout the United States and in many parts of South America.

SEXTON & POPHAM REPRESENTED

PHILADELPHIA, Sept. 29—American representation of the European firm of Sexton & Popham, consulting and sales engineers, has been taken by Joseph A. Anglada, the automotive engineer whose offices here are in the Real Estate Trust Building. Anglada will handle the commercial and engineering part of the company's business in this country.

Sexton & Popham represent a number of American accessory companies as the exclusive European agents, the firm's headquarters being at 80 Rue Biossiere, Paris. The concerns represented are the Wilcox Bennett Carburetor Co., Minneapolis; the Erd Motor Co., Saginaw, Mich.; the G. & O. Radiator Co., New Haven, Conn.; the Twin Disc Clutch Co., Racine, Wis., and the Schwarz Wheel Co. of Philadelphia.

A CORRECTION

NEW YORK, Sept. 27—The recent notice from East Orange, N. J., telling of the death of F. M. Shepard, stated incorrectly that he was president of the Goodyear Tire & Rubber Co. of Akron, Ohio. Mr. Shepard was the president of the Goodyear Rubber Co., of 787 Broadway, this city, a concern manufacturing rubber products, which is not connected with the Akron corporation.

Louisiana Licenses Increase 233 Per Cent

In Last Five Years License Fees Go Up from \$12,000 To \$240,000—Improved Roads

NEW ORLEANS, LA., Sept. 25—The number of automobiles operated in Louisiana has increased 233 per cent since 1914, according to figures just published by the State Department of Agriculture. The cars in the state last year were 40,000, compared with 12,000 in 1914.

New Orleans had more than 10,000 licensed cars in 1918. Figures for New Orleans for this year, kept at the license bureau in the city hall, indicate so far that more than 12,000 licenses have been issued. Of those issued 3000 are for trucks.

In 1917, there were 28,394 automobiles paying license fees in Louisiana. Lack of good roads prior to 1918 kept down the number of cars.

Total receipts from licenses for the years covered in the report were as follows: 1914, \$12,000; 1915, \$75,600; 1916, \$112,000; 1917, \$166,835; 1918, \$240,000.

Exhibit Space Is Oversubscribed

CHICAGO, Sept. 27—An oversubscription of the exhibit space at the Medinah Temple here was reported this week by the committee having charge of the arrangements for the annual show of the Automotive Equipment Association to be held Nov. 3-8. Requests for space are continuing to arrive and the stage of the big hall has been given over to some of the exhibitors.

Manufacturers of accessories and automotive equipment have constituted the largest requests for exhibit space. However, officials in charge of the show are seeking to bring out more interest among jobbers and it is hoped that many such concerns will get behind the show.

Practically all arrangements for the showing have been completed with the exception of the hall decoration and the actual placing of the exhibits. Contracts have been let for the decorative work and this will be under way soon. The show is under the supervision of William M. Webster, commissioner of the association.

VEHICLE TRANSFER AUTHORIZED

WASHINGTON, Sept. 25—A bill has been introduced in the Senate authorizing the Secretary of War to transfer free of charge surplus vehicles and motor equipment to the Department of Agriculture for use in the improvement of highways, Post Office Department for use in the transmission of mails, the Navy Department upon request of the Secretary of the Navy, and to the Treasury Department for the use of the Public Health Service.

Want Army Trucks For Hauling Food

Plan for Reducing Living Cost Would Use Motor Equipment in Postal Service

WASHINGTON, Sept. 27—That the surplus army trucks held by the War Department should be turned over to the Post Office to be used throughout the nation to haul food was suggested by Representative M. C. Kelly of Pennsylvania, who believes that this will solve the problem of increasing food costs.

Congressman Kelly, in a speech before the House this week, urged the establishment of community centers in cities and in rural districts, using schoolhouses as executive offices. He pointed out that the postal motor truck route between the Park View School at Washington and the Mount Joy School in Adams County, Pa., operates successfully daily carrying farm products directly to consumers. He declared that trucks in Iowa in 1918 traveled 12,880,240 miles over the highways, hauling 488,400 tons and saving \$2,318,475.60 over the cost of horse-drawn vehicles.

Schoolhouse Logical Community Center

"The community unit in America is the public-school district. In every community in the nation, situated conveniently for all, is a public-school building. It is the logical center of any community organization," he said. "My plan is to organize every city district into a community organization in the schoolhouse. The election of a community secretary puts the responsibility into the hands of one individual. With such an organization orders for eggs, butter, vegetables and other food products may be grouped into bulk orders. All the families in the community may order through the community secretary and he can order cases of eggs instead of dozens. The same thing applies in rural sections. The farmers organize and elect a community secretary who acts as agent for the people.

"Between these two co-operative societies runs the postal service. By motor truck train and other conveyance, it carries the products at postal rates and nothing more. The connection is direct when the community secretary is made a postal agent, receiving exactly the same pay on the same basis as all other postal agents.

"From the farm center would proceed the motor trucks of the postal service, carrying food directly to the market house of the city community. These foods would be packed in standard packages and graded according to standards of the Department of Agriculture.

"Extend such a service over the entire country and the cost of living would take a permanent drop. The problem of the economical distribution of foodstuffs would be solved.

"Much of the equipment is at hand. It will take thousands of motor trucks, but some 10,000 motor trucks are idle and useless at Camp Holabird, near Bal-

timore, rusting and rotting to destruction. There are many more thousands elsewhere. These trucks should be on the roads carrying food from the farm to the pantry.

"After years of neglect of our roads, we are realizing that the highways and motor vehicles offer the proper solution for many of our problems of distribution.

"Experimental motor truck routes in the postal service have proved the efficiency of this system, not on sporadic instances, but on the test of many months.

"Fourth Assistant Postmaster-General Blakslee, in a report of these routes, cited the figures of that one known as the Washington-Rock Point-Scotland route.

\$20,822 Earned on One Route

"For November, 1916, the amount of matter carried totaled 20,600 lb. In November, 1917, the amount jumped to 49,649 lb. In November, 1918, it reached a total of 73,318 lb. In April, 1919, the total was 126,326 lb.

"The total gross earnings for 1918 were \$96,561.70. Deducting one-third for war tax, which applied on first class matter alone, leaves \$70,409.92. Deducting 50 per cent of the balance to more than cover all other postal operations, there is still left receipts of \$35,204.71.

"The entire cost of operating this route for a year, with all direct and indirect charges included, was \$14,382.27, which means that the net earnings on this one route for one year were \$20,822.44.

"There are 60,000 star and rural route carriers in our postal service. Every one should be transporting a ton of foodstuffs each day. That would mean 120,000,000 lb. of food every day and that, counting the average individual as consuming 2 lb. a day, would supply 60,000,000 people, more than the entire city population of America.

"The roads can and are being improved. The motor vehicle supplies the ideal carrier for this purpose. The rates, which are now \$20 a ton for the first zone and \$10 a ton for even local communities, can be greatly reduced and still be profitable."

ENGLAND RECEIVES GERMAN PARTS

WASHINGTON, Sept. 26—Reports that German goods are beginning to enter Great Britain have been received by the Department of Commerce. Included are automobile lighting and starting sets selling for about \$250, a price that is \$100 less than the English manufacturers are able to make.

The Board of Trade has announced that it may find it necessary to restrict imports from countries where the exchange is so low that importers have a special advantage over the domestic producer. In making this announcement, the Board of Trade had Germany particularly in mind. Whether the board will prohibit the importation of German goods on the score that the exchange is so low that it gives the Germans special advantages in competing in the British market remains to be seen.

Military Highways for Pacific Coast Suggested

WASHINGTON, Sept. 27—A bill has been introduced in the House authorizing examination, survey and report by the War Department as a preliminary to the improvement, construction and maintenance of a national system of motor-truck defense and military highways and post roads in Washington, Oregon and California. The system would be adapted to heavy transporting and to protecting the Pacific Coast from invasion and for commercial and other purposes in time of transportation emergency. The system also would be open to the general public free of tolls and under state control, except when used for national defense and military purposes. The bill would appropriate \$250,000 to defray expenses.

CANADIAN TRACTOR SHOW SOON

OTTAWA, ONT., Sept. 25—The largest farm tractor demonstration in Canada this year will be the annual plowing match here at the Canadian Government's Experimental Farm and the adjacent J. R. Booth farm, Oct. 14-16, under the auspices of the Eastern Ontario and the Western Quebec Ploughmen's Association.

The demonstration, which will not be in the form of competitive tests, will be conducted on an area of two hundred acres and it is anticipated that more than thirty-five machines will be shown. Preparations are being made to handle twenty thousand visitors during the three-day event. Prof. W. H. Day, a farm specialist of Guelph, Ontario, and W. D. Jackson, district representative in Carleton County for the Department of Agriculture, will be in charge of the demonstrations during the three days.

Among the early entries for the demonstrations are the following: Sawyer-Massey, made at Hamilton, Ont.; Hart-Parr, E-B, Lauson, Chase tractor, Case, Cletrac, Titan, Fordson, Moline, Happy Farmer, and various models produced by the International Harvester Co., The Canadian Fairbanks-Morse Co., Gould, Shapeley & Muir Co., and by the Gilson Manufacturing Co., Guelph.

BELGIAN CHAMBER OF COMMERCE

WASHINGTON, Sept. 27—The Belgian-American Chamber of Commerce, a member of the United States Chamber of Commerce at Washington, has just been re-organized after the interruption caused by the war. The services of the chamber are being extended and are at the disposal of American firms interested in establishing business connections throughout the country.

AIR SERVICE DECREASES

WASHINGTON, Sept. 27—A net decrease of 92 per cent in the total commissioned and enlisted strength from the date of the armistice to Sept. 21 is reported by the Air Service.

Control of Premier Taken by Skelton

INDIANAPOLIS, IND., Sept. 27—L. S. Skelton, formerly of Okmulgee, Okla., has become head of the Premier Motor Corp. with the purchase of 65 per cent of the stock. He will assume the general management of the concern. The department heads, Skelton has announced, will be retained.

The plant will be enlarged immediately, Skelton said. Production plans requiring 2000 employees are being considered. Quantity production on the new model Premier will be started soon. About 200 cars of this model have been practically completed. The new owner has extensive oil, glass, lead and zinc interests in the West. He was the distributor of the Premier automobiles in Los Angeles and other places in the West.

R. H. Goebel, who has had many years service with joint freight rate and tariff organizations of the railroads, has become transportation and freight director for the Rubber Association of America. His work will include analysis of rate conditions with respect to sales distribution and general information regarding traffic or transportation details.

Otto Koch has become sales manager of the Wald Mfg. Co., Sheboygan, Wis., maker of automotive equipment and parts. The Wald company has increased its capital from \$30,000 to \$90,000, and is increasing its output 100 to 150 per cent.

George W. Snyder, formerly of the Haynes Stellite Co., will represent the Davidson Tool Mfg. Co. in western Ohio and Indiana. His offices will be at Cincinnati.

Earl P. Logan has been appointed director of sales of the Kokomo Rubber Co., Kokomo, Ind. He was previously district sales manager for the company in St. Louis and later a department manager at Chicago. Six factory branches have been opened in southern and middle western states and an export department has been opened in New York.

John W. Maguire, formerly vice-president of the Brunswick-Balke-Collender Co., Chicago, is now vice-president and general manager of the Portage Rubber Co., Barberton, Ohio.

Clifton Eugene Barnes has been appointed research graduate assistant in gas engineering for the college of engineering in the University of Illinois. He graduated from the University of Illinois in 1919 with the degree of Bachelor of Science in chemical engineering.

Harvey Woolsey Hyde has been appointed research graduate assistant in gas engineering for the college of engineering for the University of Illinois. He will receive his degree as Bachelor of Science in chemistry from the University in October.

T. B. Tomkinson has been appointed assistant to the comptroller of the B. F. Goodrich Co. Prior to this he was assistant auditor for the past four years.

Men of the Industry

Changes in Personnel and Position

E. D. Gibbs has been appointed advertising director of the B. F. Goodrich Co. under second vice-president in charge of sales, W. O. Rutherford's personal supervision. Gibbs' appointment does not disturb the present advertising department, which will be continued under the direction of E. C. Tibbitts as advertising manager. For twelve years Gibbs was advertising director of the National Cash Register Co., Dayton.

W. B. Smith, late with the Goodyear Tire & Rubber Co. in New York and for twelve years in the tire business, has become western district manager of the tire department of the Nemours Trading Corp. with a territory of thirty states and headquarters in Chicago. Richard Tarantous represents Nemours in Michigan, Wisconsin and Chicago territory.

H. J. Porter, who has been connected with the sales department of the Timken Roller Bearing Co. for the past eight years, has been advanced to the position of sales manager with headquarters at the general offices of the company at Canton, Ohio.

J. R. Comber, who has been with the Timken Roller Bearing Co., Canton, Ohio, for the past seven years, has been moved from the position as head of the sales-order division to field work in connection with the tractor and farm implement division.

George C. McMullen, Pacific Coast representative of the Timken Roller Bearing Co., Canton, Ohio, has opened an office at 450 Monadnock Building, San Francisco, Cal.

Ralph Brown, sales engineer for the Perfection spring division of the Standard Parts Co., Cleveland, died of pneumonia on Sept. 22. He was 32 years of age, and was with the Standard Parts Co. since 1915.

E. W. Thompson has been appointed sales representative in Illinois, with offices at Chicago, for the Davidson Tool Mfg. Corp. He formerly represented the Standard Tool Co. in that district.

E. H. Courtenay, former assistant sales manager of the Shuler Axle Mfg. Co., of Louisville, Ky., has joined the staff of the Hydraulic Pressed Steel Co. of Cleveland. His headquarters will be at the company's district sales office at Detroit.

AJAX WILL DOUBLE CAPACITY

RACINE, WIS., Sept. 27—The Ajax Auto Parts Co. is breaking ground for a brick and steel shop addition, 65 x 120 ft., which will provide facilities for more than doubling the capacity.

INDIANA MEETING CALLED

NEW YORK, Sept. 30—A meeting of the Indiana section of the Society of Automotive Engineers will be held at Indianapolis the night of Oct. 10, it was announced here today, open to members of the organization and their guests. The meeting will be addressed by E. A. Deeds, president of the Domestic Engineering Co., of Dayton, Ohio, and Coker F. Clarkson, secretary and general manager of the S. A. E.

Robert M. Sanderson has resigned as superintendent of raw materials at the Miller Rubber Co. to become general superintendent at the Amazon Tire & Rubber Co., Akron, Ohio. Sanderson has been with the Miller company for eleven years.

William F. Edwards has severed his connections with the Goodrich-Lenhart Mfg. Co., Hamburg, Pa., to devote his time to his other interests. John F. Hundt, until recently serving as a captain in the Motor Transport Corps, will take over Edwards' territory. He will have charge of the Chicago office and the territory west of the Mississippi and western Canada.

G. A. German, Canadian sales manager for Bethlehem trucks, has resigned to become manager of the wholesale truck department for Grace Motor, Ltd., Winnipeg, Man., for eastern Canada.

George Peacock, since 1912 superintendent of the Tudhope-Anderson factory, Orillia, Ont., has left for Oshawa, where he will be manager of the Oldsmobile factory.

G. P. Goodman, who for several years has represented the Hisey-Wolf Machine Co. in the east, will join F. H. Niles & Co., to take charge of their portable tool department. F. H. Crawford has been appointed secretary and J. E. Haetten sales manager of the Niles company.

GOVERNMENT EQUIPS MOLINE PLANT

WASHINGTON, Sept. 27—The tractor plant of the Moline Plow Co., Moline, Ill., which was destroyed by fire recently, will soon be re-established with machinery sold to the company by the War Department. The company has purchased milling machines, drilling machines, planers and grinders from the War Department through the Department of Sales of the Ordnance and Air departments.

LONDON-PARIS AIR SERVICE

WASHINGTON, Sept. 28—Arrangements have been made for weekly air service between London and Paris, the machine carrying fourteen passengers at a charge of \$75 each, according to announcement made by Trade Commissioner Grady. The American agents for aircraft transportation and travel hope to arrange in the future for liners from America to be met regularly by airplanes at English and French ports.

Will Make Tractors at St. Louis Plant

ST. LOUIS, Sept. 27—The Kardell Tractor & Truck Co., a \$1,000,000 Delaware corporation, has commenced the manufacture of farm tractors here, occupying the plant formerly owned by the Whitman Agricultural Co. at 6900 South Broadway, which has 175,000 sq. ft. of floor space.

H. W. Kardell, president of the company, said full production would start about Jan. 1. He said the schedule of production in 1920 called for 5000 tractors. All of the parts will be made in the plant except the motor and wheels. The motor is being manufactured by the Wisconsin Motor Co. of Milwaukee and the wheels are of French & Hecht make.

J. C. Kardell is vice president, with W. F. Fahey as treasurer and H. F. Fahrenkrog secretary. The tractor company occupies the same offices as the Kardell Motor Car Co., Reo and Dort distributor.

VICTOR RUBBER EXPANDS

SPRINGFIELD, OHIO, Sept. 26—The Victor Rubber Co. is erecting a plant which will permit double production. The first building of the new program was completed early in the year. The cord tire department is just being moved into the second building, and a vulcanizing addition is under construction. For the past several months the plant has been operating at capacity of 23 hr. per day, with three shifts.

CANADIAN PLANT NEARS COMPLETION

WALKERVILLE, ONT., Sept. 26—Progress has been steady in the construction of the two plants of the Canadian Products, Ltd., at Walkerville, the Canadian subsidiary of the General Motors Corp. An annual production of 50,000 sets of axles and transmissions is planned. It is possible that the Walkerville units will be producing within the next month, if equipment is not delayed.

ABANDON REPUBLIC IN CANADA

MONTREAL, QUE., Sept. 29—A press dispatch from Winnipeg, Man., says that the projected Republic factory in Canada has been abandoned for the present, and the money subscribed by Canadian investors in the Republic Truck Co. of Canada has been returned.

NEW HARTFORD FACTORY

JERSEY CITY, N. J., Sept. 26—Edward V. Hartford, Inc., is moving to a new factory here about Oct. 1, with increased facilities which will permit the company to double production. The company will open offices at 35 Warren Street, New York City.

KELLY-SPRINGFIELD PLANT

CUMBERLAND, MD., Sept. 27—Work is being rushed on the new plant of the Kelly-Springfield Tire Co. here, and operation will get under way early in 1920. This plant will treble the present capacity.

Current News of Factories

Notes of New Plants— Old Ones Enlarged

FIAT AGENCY IN CANADA

MONTREAL, QUE., Sept. 27—Dr. Elmo de Paoli, who is in North America to study the automobile market, especially the Canadian one, has established the first Canadian Fiat sales agency in Montreal, with the Italian-Canadian Trading Co. This company will form the Italo-Canadian Motors Co. and handle the sale of Fiat cars. Mauro Marengo will be president of the new company.

BEARINGS COMPANY ADDING

LANCASTER, PA., Sept. 27—At a recent meeting of the board of directors of the Bearings Co. of America it was decided to increase the thrust bearing factory facilities by the erection of another building, which will give approximately 60,000 sq. ft. of additional floor space. The company will then have four separate factories: one for the manufacture of thrust ball bearings, one for the manufacture of ball retainers, another for universal joints and a fourth for the manufacture of drop forgings.

TRANSPORT TRUCKS IN PRODUCTION

MT. PLEASANT, MICH., Sept. 29—The Transport Truck Co. has moved into its new plant, which covers a 21-acre tract. The company is planning an immediate production of ten trucks daily of its three models, a 1-ton, 1½-ton and a 2-ton job. The selling range is from \$1,650 to \$2,585. The company proposes to double its output within six months.

HYATT HAS TRAINING COURSE

NEWARK, N. J., Sept. 26—The Hyatt Roller Bearing Co. has undertaken a course in training for foremen and other executives. A group of about 100 men will be in the class. The subjects covered will be team work, handling men, organization, machinery and materials, production records and management, and the solution of typical factory problems.

STEEL SPRINGS INSTEAD OF PNEUMATICS

MORGAN CITY, LA., Sept. 27—H. J. Boudreux and Joseph H. Loeb, both of this city, have established a small manufacturing plant for the construction of a patented automobile wheel to do away with pneumatic tires. Steel springs are used on the spokes, which are set at a tangent.

CONTINENTAL PARTS MOVES

COLUMBUS, IND., Sept. 27—The Continental Auto Parts Co. has moved here from Knightstown, Ind.

Highway Equipment Co. to Have Tractor Factory

CLINTONVILLE, WIS., Sept. 27—The Sumner Iron Works, Everett, Wash., makers of logging, lumbering and highway construction equipment on the Pacific Coast, are planning to add a complete tractor factory to the plant and expect to arrange with the Topp-Stewart Tractor Co. of this city, for the right to build the Topp-Stewart, a four-wheel-drive design, on a royalty basis. Meantime the Sumner company is the exclusive distributor for the Topp-Stewart concern in the coast territory.

MURRAY CO. FOR CLEVELAND

CLEVELAND, Sept. 27—The J. W. Murray Manufacturing Co. of Detroit, a \$3,000,000 corporation making automobile sheet metal products, soon will open a branch factory here.

Operations will be started by the company in this city immediately. Floor space is to be leased, where assembling will be done. Plans call for the erection of a two-story plant. Although the location has not been made public, it is understood the plant will be built near the Chandler Motor Co. and the Cleveland Automobile Co. Both corporations use Murray products. The Murray company supplies a large number of makers of commercial and passenger cars with fenders, hoods, gasoline tanks, mufflers and other accessories.

LEWIS CONSTRUCTING PLANT

TOLEDO, OHIO, Sept. 29—Work has been started on a new \$100,000 plant for the Lewis Steel Products Co., valve manufacturer, on a site just purchased between Clifford and Adrian streets on lower Summit Street. The main buildings will consist of a foundry, 80 x 300 ft.; a machine shop of the same dimensions and a two-story office building. The plant is expected to be completed by Jan. 1.

The present plant at 4080 Detroit Avenue will be abandoned as soon as the new factory is completed. Three hundred are employed. This force will be greatly increased.

COOPER BATTERY IN PRODUCTION

CINCINNATI, OHIO, Sept. 29—The plant of the Cooper Storage Battery Manufacturing Co. has been set in operation. The battery will be ready for general distribution on Oct. 1. At present the plant will have a capacity of 250 storage batteries a day. This will later be increased to more than 400 a day.

The sales of the Cooper storage battery in this territory will be handled through the I. J. Cooper Rubber Co.

CURTISS CALLS IN STOCK

The Curtiss Aeroplane & Motor Corp., Buffalo, N. Y., has called for payment Oct. 15 at 110 and dividend, 5369 shares of preferred stock, selected by lot, as shares outstanding number 60,000. The amount of stock called is about 9 per cent of the total.

Calendar

SHOWS

- Sept. 24-Oct. 4—New York, N.Y. New York Electrical Show, Grand Central Palace.
- Sept. 30-Oct. 14—Dallas, Texas. Southwest Motor Show, Dallas Automobile and Accessory Dealers' Assn.
- October—Ft. Dodge, Ia. Fall Motor Show, District Fair Grounds.
- Oct. 6-11—Detroit, Mich. Closed Car Show, Arena Gardens. Detroit Auto Dealers' Assn., H. H. Stuart, Mgr.
- Oct. 11-18—Pittsburgh, Pa. Fall Show.
- Oct. 15—New York City. Opening of International Farm Tractor and Implement Exchange, Grand Central Palace.
- Nov. 3-8—Chicago, Ill. Business Exhibit of Automotive Equipment Assn., Medinah Temple.
- Nov. 16-23—New York Automobile Salon, Hotel Commodore.
- January—New York. International Automobile Mfrs. Congress.
- Jan. 3-10—New York, N. Y. Grand Central Palace, National Automobile Chamber of Commerce, S. A. Miles, Manager.
- Jan. 3-10—New York City. Eighth Coast Artillery Armory, commercial cars and accessories.
- Jan. 17-24—Cleveland. Nineteenth Annual Automobile Show, Cleveland Automobile Mfrs. and Dealers Assn., Wigmore Coliseum.
- Jan. 24-31—Chicago, Ill. Coliseum, Cars; Drexel Pavilion, Trucks; National Automobile Chamber of Commerce, S. A. Miles, Manager.
- Jan. 24-31—Chicago. International Amphitheater, commercial cars and accessories.
- Feb. 21-28—Ottawa, Ont. Motor Show.
- Feb. 23-28—Louisville, Ky. Twelfth annual exhibition, Louisville Automobile Dealers' Assn., First Regiment Armory.
- February—Chicago. International Automobile Mfrs. Congress.

February—Deadwood, S. D. Annual show, Deadwood Business Club, F. R. Baldwin, Manager.

FOREIGN SHOWS

- Aug. 23-Oct. 6—Toronto, Can. Cars, Trucks and Tractors, Airplanes and Motor Boats in conjunction with Canadian National Exhibition.
- *Oct. 9-19—Paris. Grand Palais, International Automobile Mfrs. Congress.
- Oct. 14-16—Ottawa, Ont., Can. Interprovincial Plowing Match and Tractor Demonstration.
- November—Christchurch, N. Z. First National Motor.
- Nov. 7-16—London. Olympia Motor Car Exhibition—Society of Motor Mfrs. and Trades.
- December—Brussels. International Automobile Mfrs. Congress.
- January—Glasgow, Scotland. Scottish Motor Exhibition.
- February—Manchester, Eng. North of England Motor Exhibition.
- Feb. 23-March 6—Birmingham, Eng. British Industries Fair.
- March—London, Eng. Motor Boat, Marine and Stationary Engine Exhibition.
- March—Adelaide, Australia. All Australian Exhibition of motor vehicles, airplanes, engines and automotive equipment.
- April or May—London, Eng. Commercial Vehicles Exhibition, Olympia.
- April 3-May 4—Buenos Aires. Exposition of U. S. manufactures.

AUTOMOTIVE SHOWS AT FAIRS

- Sept. 24-Oct. 4—Kansas City, Kan. Cars, trucks and tractors.
- Sept. 27-Oct. 4—Fort Dodge, Ia. First annual fair of Hawkeye Fair Assn.
- Sept. 29-Oct. 4—Meridian, Miss. Cars and tractors. A. H. George, General Manager.
- Sept. 29-Oct. 4—Chattanooga, Tenn. Chattanooga Auto Dealers' Assn.

- Sept. 29-Oct. 4—Muskogee, Okla. Cars, trucks and tractors.
- Sept. 30-Oct. 3—Brockton, Mass. Cars.
- Sept. 30-Oct. 4—Lancaster, Pa. Lancaster Fair Assn.
- October—Columbia, S. C. Columbia Automobile Dealers' Assn.
- Oct. 6-19—Dallas, Tex. Cars, Trucks and Tractors, Texas State Fair.
- Oct. 20-25—Raleigh, N. C. Cars, trucks and tractors.
- Oct. 22-27—Shreveport, La. Cars, trucks and tractors.
- Oct. 27-31—Columbia, S. C. South Carolina State Fair Assn.
- Nov. 3-8—Phoenix, Ariz. Tractor Demonstration, Arizona State Fair.

TRACTOR SHOWS

- Sept. 30-Oct. 2—Houston, Tex. Tractor Demonstration, Houston Chamber of Commerce, A. E. Hildebrand, Mgr.
- Oct. 14-17—Evansville, Ind. Central States Tractor Sales Show, W. R. Heilman, Mgr.
- Oct. 15—Ellensburg, Wash. Tractor demonstration in charge of W. L. Davis, County Agricultural Agent.
- Oct. 15-18—Charleston, W. Va. Tractor Demonstration, Kanawha County Fair.
- Oct. 30—Yerington, Nev. Tractor demonstration, Lyon County Farm Bureau.
- Nov. 22-29—Jacksonville, Fla. Florida State Fair and Exposition, B. K. Hanaford, Manager.
- February—Kansas City, Mo. Fifth Annual Kansas City Tractor Club, Guy H. Hall, Manager.
- Feb. 9-14—Wichita, Kan. Tractor and Farm Machinery, Forum, Wichita Thresher-Tractor Club.

CONTESTS

- Oct. 4—Trenton, N. J. Dirt track event.
- Oct. 8—New York-San Francisco. Air Race across continent, auspices of U. S. Army.
- Oct. 11—Cincinnati, O. 300 mile Speedway race.
- Oct. 11—Danbury, Conn. Dirt track event.
- Nov. 2-3—El Paso, Texas. El Paso-Phoenix road race.

- *Nov. 27—Los Angeles, Cal. Ascot Speedway race.
- Dec. 29—Los Angeles, Cal. Ascot speedway race.
- August, 1920—Paris, France, Grand Prix Race, Sporting Commission, Automobile Club of France.

CONVENTIONS

- Oct. 1-4—Cleveland. Eighth annual safety congress of National Safety Council.
- Oct. 9-10—Jackson, Miss. Second Annual Convention, Louisiana-Mississippi Assn.
- Oct. 14-17—Atlantic City, N. J. Twenty-fifth Annual Convention, Marlborough-Blenheim, National Hardware Association of the United States.
- Oct. 15-17—Chicago. Twenty-sixth annual convention of the National Implement and Vehicle Assn., Congress Hotel.
- Oct. 16-17—New York. Business Conference in connection with Foreign Trade Convention of Amer. Mfrs. Export Assn.
- Oct. 20—Atlantic City, N. J. Convention of business men called by Chamber of Commerce of U. S. to confer with foreign delegates.
- Oct. 27-28—Santa Barbara, Cal. State Automobile Trade Assn., Southern Division.
- Oct. 29—Washington, D. C. Annual Labor Conference provided by Peace Treaty.
- November—London, Eng. Road Transport Congress and Exhibition.
- Nov. 3-8—Chicago, Ill. Convention, Automotive Equipment Assn., Medinah Temple.
- Nov. 7-8—Detroit. Meeting of National Assn. of Motor Truck Sales Managers, Hotel Statler.
- Dec. 3-5—Cleveland. Ohio Automobile Trade Assn., Annual Convention.
- January, 1920—Washington. Pan-American conference.
- Feb. 9-13—Louisville, Ky. Seventeenth Annual Convention American Road Builders' Assn., Tenth American Good Roads Congress and Eleventh National Good Roads Show.
- May 15-20, 1920—San Francisco. Seventh National Foreign Trade Convention.

EL PASO RACE

EL PASO, TEXAS, Sept. 29—At a conference of the race promoters here, it was definitely decided to start the El Paso-Phoenix road race from this city on Nov. 2 and finish in Phoenix Nov. 3, the first day of the Arizona State Fair. The route taken will probably be the same as that taken in former races, through Douglas, Bisbee and Tucson, but will be changed to include Clifton, Globe and other towns in eastern Arizona.

OTTAWA FOR VETERAN TRUCKS

OTTAWA, ONT., Sept. 30—Developments are reported in connection with plans for the manufacture of Veteran 2- and 2½-ton trucks by the Eastern Canada Motor Truck Co., Ltd., Ottawa. This firm has acquired a factory at Hull, and its models are among the first of

their particular size which will be brought out as a Canadian product.

Factories here are making a variety of automobile and truck bodies, special tops and other lines for the motor vehicle. Charles B. Edmonson, 18 Pretoria Avenue, has a new factory in which are facilities and equipment for the manufacture of special tops, seat cushions and backs, seat covers, side covers, side curtains and other parts.

KAHN MFG. CO. INCORPORATED

MILWAUKEE, WIS., Sept. 27—Articles of incorporation have been filed by the Kahn Mfg. Co., Milwaukee, with an authorized capital stock of \$150,000. It will manufacture spark plugs, ignition specialties and other automotive equipment. The organizers are August Haber, Edward Wagenknecht and Albert Brandenburg.

UNITED AIRCRAFT BUYS PLANES

WASHINGTON, Sept. 27—Seven hundred aircraft engines and a large number of airplanes for export to Canada and America to be used in developing commercial air service have been purchased by the London agents of the United Aircraft Engineering Corp. of New York, according to the London *Daily Telegraph*. Five hundred machines comprising the entire Canadian Royal Air Force equipment also have been purchased by this corporation.

BRISTOL PLANE TO AMERICA

NEW YORK, Sept. 27—For the purpose of introducing the Bristol airplane in America, the British and Colonial Aeroplane Co., Ltd., has opened offices at 512 Fifth Avenue, with W. G. Rannels in charge as business director of the American interests.

